McIDAS-X

Man computer Interactive Data Access System for UNIX

Users Guide

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Reader Response

We would like your comments on our manual. Please take a moment to fill out this self-mailing form and return it to SSEC - McIDAS User Services and Documentation. Thank you.

Manual name (from the title page)

_____

On a day-to-day basis, do you actually need this manual in order to use the system?

_____

Have you found specific informational uses for this manual? Please explain.

_____

_____

Did you find errors or omissions in the manual? Please be very specific.

_____

_____

_____

Please rate this manual on the following items from 1 to 5, with 1 as low and 5 as high.

Text	1	2	3	4	5
Graphics	1	2	3	4	5
Ease-of-use	1	2	3	4	5
Overall	1	2	3	4	5

What is the best feature of this manual?

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Installation Procedure

Use this procedure to install McIDAS-X.

1. Add a new user to your system, naming it **mcidas**.

2. Add the directory ~mcidas/bin to the current path statement specified in the mcidas .profile (bsh) or .cshrc (csh) files.

3. Retrieve the following files from the SSEC machine, using the address and login information provided to the site coordinator in the cover letter. The files should be transferred (via ftp) with type=binary. The destination should be ~mcidas.

File name	Description
README	file containing the installation instructions
mcidas.tar.Z	compressed tar file containing all source files and data files
mcinstall	shell script that does the McIDAS installation

4. Alter the file permissions of the mcinstall script to allow execution.

   Type: **chmod +x mcinstall**
   Press: **Enter**

5. To build the McIDAS-X system, start the system build.

   Type: **sh mcinstall** *xxx*
   Press: **Enter**

   replacing *xxx* with **sgi** or **ibm**, depending on your type of workstation. This step will uncompress the data files and source files needed to build and run McIDAS-X. It compiles the source code and writes the compiler output to files src/cmperr and src/cmpout, and the executables to the bin subdirectory.

6. Before logging on to a mainframe, you must alter the HOST.PTR file in the ~mcidas/data directory so that it contains the host address. The file currently contains AAA BBB CCC DDD, which must be changed to the decimal address, with NO decimal points. Use a text editor to change this file, and be sure to put blanks out past column 40 on the line containing the address.

   This completes the installation process.

Suggested Configuration for Multi-User Systems

The configuration described below is recommended if you will have any of the following situations:

- several users on one workstation using McIDAS-X simultaneously via remote workstations or xterms
- several users on one workstation using McIDAS-X at different times
- the capability for users to have their own copies of areas, MD files and grids without overwriting shared data or destroying other users' data

1. Provide accounts for McIDAS-X users on your system. For each McIDAS-X user, add the following directories to make a McIDAS environment:

```
$HOME/mcidas
      $HOME/mcidas/bin
      $HOME/mcidas/data
      $HOME/mcidas/src
```

2. The script mkaccts in ~mcidas/admin is a sample script you can use or modify to fit your system. The mkaccts script will create user accounts and mcidas subdirectories, and copy or link all mandatory McIDAS files to the new accounts. To call mkaccts,

   Type: **mkaccts joe barb tom judy**
   Press: **Enter**

   This creates the accounts named joe, barb, tom and judy, and sets up the McIDAS environment in each account. Do not use this script if these accounts already exist.

   This script is just a guide, and can be modified to whatever configuration and implementation plan you enact.

3. The user's .profile (bsh) or .cshrc (csh) files will need the $PATH modified to include ~mcidas/bin, and $HOME/mcidas/bin. Also, the .mwmrc which is sent out with McIDAS-X and stored in the ~mcidas directory will need to be copied to each user's home directory.

4. All .pgm and .mac files from ~mcidas/src will need to be symbolically linked to users' mcidas/src files, so they can access McIDAS on-line helps.

5. SSEC recommends symbolically linking all but the following files from the ~mcidas/data directory to the $HOME/mcidas/data directory.

   - TERMCHAR
   - FRAMENH.*
   - FRNV.*
   - EXPORT.*
   - IMPORT.*
   - FRAMED.*
   - ALLOC.WWW
   - SKEDFILE

   If many users will share data, e.g., current areas, MD files or grid files, place the data in the ~mcidas/data directory. Then symbolically link data from the ~mcidas/data directory to the $HOME/mcidas/data directory. Any file created by a user will exist only in that user's directory. Thus, assigned data set numbers are not necessary.

   The file STARTUP.SYS contains McIDAS commands that are executed when McIDAS-X is started. This file should not be linked if you want to have other programs run at startup. In this case, copy STARTUP.SYS to the $HOME/mcidas/data directory and modify it with a text editor.

6. Included in the ~mcidas/admin directory is a file named relink. This relinks all McIDAS files necessary for users to run McIDAS to each user's mcidas directories. If you choose to use the relink script, it should be checked and modified to link all data files that users will have access to, and exclude files that should not be linked. User's accounts must be relinked whenever shared data is added to the ~mcidas/data directory, or new source code is placed in the ~mcidas/src directory. The relink script will run through all users on the system, relinking McIDAS files. If not all users will have McIDAS-X capabilities, modify the relink script to only relink the supported users and files.

Introduction to McIDAS-X

This section describes how to:

- start and end a McIDAS-X session
- use McIDAS-X windows
- display images and graphics
- roam frames
- define the cursor
- use the 3-button mouse
- start multiple McIDAS-X sessions
- enter commands, edit the command line, and use string tables and function keys
- define the McIDAS-X Loop Control System
- add frames
- name, list, transfer and convert files
- register MD file schemas

Starting and Ending a McIDAS-X Session

Starting the Session

To start a McIDAS-X session,

Type: **mcidas** *flags*
Press: **Enter**

To list the *flags* and their current settings,

Type: **mcidas -help**
Press: **Enter**

Enter the flags in the standard UNIX format as shown below. The order is irrelevant and not all are needed.

Flag	Description
-fr *number max*	number of frames available when McIDAS is started and the maximum number of frames for this session (default=4 24)
-imsiz *line ele*	size of the frames when McIDAS is started (default=480 640)
-lv *image graphics*	number of image and graphics levels (default=128 16)
-tx *number*	number of text windows (default=1)
-fn *name*	name of the font to use in the text window (default=-adobe-courier-bold-r-normal--14*)
-bg *color*	background color for the text window (default=blue)
-fg *color*	foreground color for the text window (default= yellow)

For example, if you enter this command line:

```
mcidas -lv 128 8 -tx 2 -fn rom10 -bg gray -fg red -fr 4 8
```

Your McIDAS-X session will start up with:

- 128 image levels and 8 graphics levels
- 4 image frames with a maximum of 8 frames, each frame 480 lines by 640 elements

- 2 text windows that use the Roman 10 font
- red foreground color in text windows
- gray background color in text windows

To change the defaults for a session, copy the McIDAS-X script (~mcidas/bin/mcidas) to your bin directory. Renaming the file before editing it is recommended. At the beginning of the file are some SET commands followed by an attribute name and attribute. Change the attribute keeping the syntax the same, as even a space can cause problems in a SET command. Then save the file. This file name will be used in place of 'mcidas' when starting a McIDAS-X session.

When defining frame size, number of frames and maximum number of frames, consider the amount of memory available on the workstation. The recommended maximum number is 20 images (480 x 640) on a 16 MB workstation. Additional memory is required for larger frames. A 1024 x 1024 frame requires three times as much memory as a 480 x 640 frame. You can add frames dynamically from a McIDAS session by using command MAKFRM. See the *Adding Frames* section in this Introduction for more information.

Ending the Session

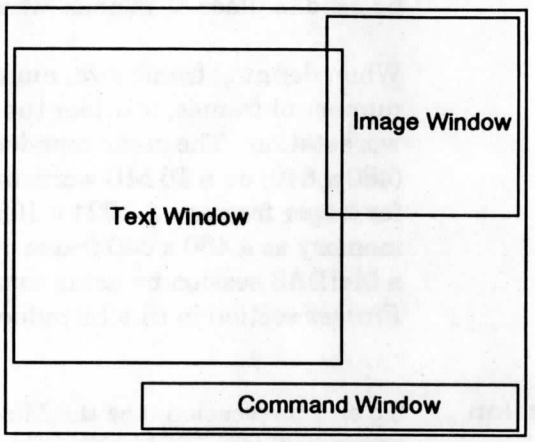
To end the session, use the McIDAS-X command EXIT. It closes the command, text, and image windows and ends all McIDAS processes. This is a cleaner way of quitting the McIDAS-X session rather than closing each window.

Using McIDAS-X Windows

A McIDAS-X session uses three types of windows:

- command
- image
- text

You can resize and reposition these windows. A typical layout might look like the one shown below.



The window manager uses the .mwmrc file to determine the behavior of the windows. The .mwmrc file included with the McIDAS-X release generates windows that require you to move the cursor into a window and click the left mouse button to make it active. The active window receives all keyboard input; only one window on the display can be active. The .mwmrc file is set up this way so the cursor can appear (and be used) in the image window while keeping the command window active for entering McIDAS commands.

By activating a window, you also raise it. Raising a window brings it to the top of any overlapping windows. A raised window is not necessarily active.

Command Window

The command window is used for McIDAS command entry and to display workstation status information. This window or the image window must be active to execute a McIDAS command. Thus, before you type a McIDAS command, make sure the command window (or image window) is active by moving the cursor into it and clicking the left mouse button. If you type a command with some other window active, the command will not perform any McIDAS function.

McIDAS format requires that you enter the command name, parameter and keyword letters in uppercase, so most letters entered in the command window are automatically converted to uppercase as you type. Lowercase letters should only be needed when a command uses a double quote (") to indicate a text field. To enter lowercase letters after the quote, use the Caps Lock key as a toggle or hold down the Shift key while typing. The state of the Caps Lock light may be incorrect as you toggle the Caps Lock key in McIDAS-X. This is due to the Caps Lock key being treated as a toggle while in a McIDAS-X command window.

The current frame number, loop bounds, looping status, host connection status, date and time are all displayed in the upper portion of the command window. They are updated as the state of your terminal changes; the time is updated every minute.

Image Window

The image window displays McIDAS-X frames containing McIDAS-X generated images and/or graphics. Use the SF, A, B and L commands to change frame numbers.

By default, the image window is sized to match the current frame's dimensions. Resizing the image window does not change the size of the current frame, but does determine how much of the frame you can view. See the *Displaying Images and Graphics* section for more information on frames, and the *Roaming Frames* section for more information on changing the image window size and roaming frames.

To raise the image window, press the plus (+) key on the numeric keypad while the command window is active. This does not affect the active status of the command window, so you can continue with other McIDAS commands and actions.

Text Window

The text window displays McIDAS text output. You can resize the window, but try to keep it at least 80 characters wide, as McIDAS output is formatted for 80 characters. You can create 1 to 10 text windows for any session (see *Starting and Ending a McIDAS-X Session*). They are scrollable to 80 lines of text. Text windows 0, 1 . . 9 are labeled McIDAS0, McIDAS1 . . McIDAS9, respectively.

To raise a text window, press the corresponding number in the numeric keypad while the command window is active. For example, pressing the 3 key on the numeric keypad raises text window 3, which is labeled McIDAS3. This does not affect the active status of the command window, so you can continue with other McIDAS commands and actions. Some workstations may require the Num Lock key be enabled. Sun workstations require you to press the Alt Graph key and the appropriate numeric keypad key simultaneously to raise the text window number.

By default, McIDAS command text output is displayed on the text window that was last raised. For example, if you press the 5 key on the numeric keypad to raise text window 5, then press the + key to raise the image window, and enter a command, its output is directed to text window 5.

Use the TWIN= keyword to direct the output to another text window. For example, entering command **LA 1 10 TWIN=1** while text window 5 was last raised will override the default and direct the LA command output to text window 1.

To scroll upward in a text window, move the cursor to the vertical scroll bar and press the right and/or middle mouse button. This action does not change the active status from another window to the text window; you can continue your work in the active window.

Displaying Images and Graphics

Images and graphics are combined frames in McIDAS-X. Graphics output overlays any displayed image. A frame can consist of an image, graphics or image with embedded graphics. You cannot erase just the image or graphics portion from the frame. The EG command erases both the image and graphics, resulting in a blanked frame. Also, loading a new image with the DF command overwrites any previously displayed image and/or graphics in that frame.

Image Color Levels

The number of gray shades in your McIDAS-X session is dynamic and can be specified with the *image* parameter in the -lv flag when you start your session. The value must be a power of 2. If you specify a value larger than the number of levels available on the server, the server will provide as many levels as possible.

Graphics Color Levels

The number of graphics color levels in your McIDAS-X session is dynamic according to the number of levels specified with the *graphics* parameter in the -lv flag when the session is started. Thus, the range of valid graphics color levels that can be used with the McIDAS-X commands described in this manual is the number specified at startup and can change with each McIDAS-X session.

Roaming Frames

The X Windows environment allows you to resize command, image and text windows. If you create frames larger than the display or reduce the size of the image window, you won't be able to view the entire frame. You may, however, use the roam feature to view the entire frame.

For example, if your frame size is 1000 x 1000, you can reduce the image window to 250 x 250 so it won't cover as much of the display. At this time, you can only see the first 250 lines and elements of the original 1000 x 1000 frame. You can interactively roam the frame to view the desired 250 x 250 section of the frame. To do this, move the cursor into the image window and hold down the middle mouse button while moving the mouse. Release the middle mouse button to leave the current display in place. To reposition the frame to its default location, click the right mouse button while the cursor is inside the image window.

Defining the Cursor

When you move the cursor into the image window, it becomes one of the cursor types defined by the McIDAS-X CUR command. See the CUR command for the valid types, sizes and colors.

Since the cursor is used for other X Windows applications, it is limited in size to a maximum of 63 x 63; there is no lock/unlock feature.

Using the 3-Button Mouse

Many McIDAS applications require that you press mouse buttons for selecting points, drawing graphics and starting/stopping actions. Since some mice are equipped with 2 buttons, McIDAS applications are limited to using either one or two buttons.

You will see references in the command documentation and responses directing you to use the left and/or right button. In all cases, when you are instructed to use the right button, use the rightmost button of your mouse. When instructed to use the left button, use the left button on a 2-button mouse or the middle button on a 3-button mouse.

In the Commands section of this manual, all references to the left mouse button were changed to middle mouse button; however, some McIDAS-X commands also exist in McIDAS-OS2 (used with a 2-button mouse) and their on-line HELPs and command responses instruct you to use the left button.

Starting Multiple McIDAS-X Sessions

Multiple users can run separate McIDAS-X sessions from remote workstations or on one display. Each user must have a separate mcidas environment (explained in the *Installation Instructions*).

To avoid potential conflicts, never start up more than one McIDAS-X session per mcidas environment. If more than one McIDAS-X session is started on a single display server, any session after the first may not be able to allocate colors for the session. Thus, you won't be able to change the colors in those sessions with commands EU or GU.

Entering Commands

The command window or the image window must be active for McIDAS command entry. You can scroll the text windows or raise the text or image windows without losing the active status of the command window. See the *Using McIDAS-X Windows* section for more information.

Use the following protocols when entering McIDAS-X commands.

- Enter up to 160 characters on a command line. The command window shows the first 80 characters, then scrolls to the right as more are entered.
- After typing a command, press Enter to execute it.
- Execute system defined single-letter commands by simultaneously pressing the Alt and letter keys, or typing the letter and pressing Enter. You can enter single-letter commands using the Alt key while entering a multiple-letter command in the command window.
- Enter single-letter strings with a pound sign (#). Press Ctrl and the letter if the single-letter string is a complete command.
- The H command toggles between the host and local mode. The host mode is indicated by a period (.) appearing in the first position of the command window. Pressing Alt+H returns the workstation to the local mode and removes the period from the command window.
- Commands will not run if they are preceded by one or more spaces before the first character of the command name. This can be done only by manually adding spaces before the command while in the insert mode. Generally, parameters and keywords are separated by one space. McIDAS interprets multiple spaces between parameters and keywords as a single space.
- Use the question mark (?) command in the local mode to display local status. Active processes are listed with a Process IDentification (PID) number. To terminate a local command, use the slash (/) or KILL command with the appropriate PID value.

For more information about the conventions used in McIDAS-X commands, see pages 3-1 and 3-2.

Editing the Command Line

Listed below are the command line editing keys and their functions.

Key	Function
Home	moves the cursor to the beginning of the line
End	moves the cursor to the end of the line
Insert	toggles the insert typing mode
Delete	deletes the character over the cursor
Backspace	deletes the character to the left of the cursor
Right/Left arrows	moves the cursor one character to the right or left
Enter	executes the command (If the text window's bottom line is not displayed, Enter forces the display to the bottom showing the echoed command.)
Esc	erases the command from the command window and places the cursor at the front of the line
& and ^	recalls a command if the command line is empty or contains a command recalled with & or ^ (The & recalls the previous command from a circular list of the last 20 commands entered; ^ scans the recall list in the opposite direction.)

Note: The Home, End, right/left arrows, Ins and Del keys on the numeric keypad do not work in McIDAS-X.

Using String Tables and Function Keys

Local string tables are always active, even when commands are sent to the host. A local string executing the command **MDU LIST 1 100** will run locally if the string is entered locally, and will run on the host if the string is entered while in the host mode.

The string table commands TD, TE, TL and TU are identical to the McIDAS-MVS commands. Use the SAVEFILE= keyword in TU to keep personal copies of your string tables. Use command SENST to transfer string tables to or from the host.

To execute a string on the host named STR, enter two pound signs (##STR). To execute a string on the host named #STR, enter four pound signs (####STR). If the strings named STR and #STR reside in the local string table, use one and two pound signs respectively to execute them on the host.

Use the local string command TE to program your own function key definitions. Using the Alt, Shift and Ctrl keys, there are 40 combinations available for the function keys:

TE KEYF*n* *"command*	where *n* defines the function key number for keys F1-F10
TE KEYAF*n* *"command*	combines the Alt key with a function key F1-F10
TE KEYCF*n* *"command*	combines the Ctrl key with a function key F1-F10
TE KEYSF*n* *"command*	combines the Shift key with a function key F1-F10

You can run commands defined with function keys any time, whether in host or local mode, and while entering a multiple-letter command.

Defining the McIDAS-X Loop Control System

McIDAS-X can display an automatically repeating sequence of frames much like a movie loop. You define the sequence of frames with either the LS or LB command. Command DR determines the amount of time that each frame is displayed.

Once a loop is defined, single-letter commands L, A and B can further define the state of the display. The L command starts and stops the loop. If the loop is actively stepping through frames, pressing Alt+L stops on the first frame of the loop. Similarly, if looping is inactive, pressing Alt+L starts the animation. The A command manually advances one frame while the loop is stopped; the B command backs up one frame while the loop is stopped.

If the current loop was set using command LS with the UPDATE=Y keyword and contains a reference to the frame just displayed with the DF command, the loop sequence is rotated until the new frame is in position 1 of the loop. The dwell rates are not changed; therefore, the newest image always has the dwell initially set for position 1. In addition, this position is always the frame displayed when the looping is stopped.

Although McIDAS-X allows frames of different sizes in any session, you should make all frames in the loop bounds the same size when using the L command for looping. Swapping different sized frames displays poorly and is handled roughly by the window manager.

Adding Frames

You will specify the number of frames and the maximum possible number of frames for a McIDAS-X session each time you start a session. If you want to add more frames later, use the MAKFRM command. New frames are appended to the end of the current frame list. You will not be allowed to add more frames than you allocated with the maximum frame parameter when the session was started.

Use the F command to list the current frame configuration for your session.

Naming, Listing, Transferring and Converting Files

McIDAS-X areas, MD files and grid files stored on disk use the naming convention AREA*nnnn*, MDXX*nnnn* and GRID*nnnn* where *nnnn* is the 4-digit file number. For example, MDXX0013 is the name for MD file 13.

The DMAP command lists all LW, MD, grid and area file formats. For example, the entry **DMAP MDXX5** lists MD files 5000 to 5999 currently on disk (same as entering **MDU LIST 5000 5999**).

To copy areas, MD files, grid files or other LW files from a workstation running McIDAS-OS2, either transport the files with a diskette or establish an FTP (File Transfer Protocol) session.

Bytes are stored in a different order in the OS/2 operating system than in UNIX. You must convert LW files transferred from McIDAS-OS2 to McIDAS-X to the correct format. Areas, grids and MD files can be transferred without conversion because the structures are known and can be handled through the data access routines.

Use command LWCON to convert LW files to the McIDAS-X format. Use it only on files containing 4-byte integers and/or ASCII characters (on word boundaries). It will not convert files that contain 2-byte integers.

Registering MD File Schemas

Each version of McIDAS-X includes copies of the LW files DCISFC, DCIRAB, DCISHP, DCFOUS, DCSYN and DCISEN in the mcidas/data subdirectory. These files define the ISFC, IRAB, IRSG, ISHP, FOUS, SYN and ISEN MD file schemas. IRAB and IRSG are both contained in schema DCIRAB. Additional schemas will be supplied as needed.

When you register a schema using McIDAS-X command SCHE (in the Commands section of this manual), the LW file is read and the schema's internal form is copied into LW file SCHEMA, which also resides in the mcidas/data subdirectory. Command SCHE can also add locally developed schemas to the workstation.

The MD file input/output routines read, write and extract data to and from MD files of registered schema types only. This is why you should always register the supplied schemas using the SCHE command after installing McIDAS-X for the first time.

Once a schema is registered on the workstation, it is not necessary to register it every time you install a new version of McIDAS-X. When a schema is updated, it is noted in the *Significant Program Changes* document supplied by SSEC for your site coordinator with McIDAS-X upgrades. You must register the new schema version to remain compatible with SSEC.

To register the MD file schemas, first complete the software installation procedure. Then bring up McIDAS-X in the local mode (H key turned off). Finally, use McIDAS-X command SCHE to register each schema.

For example, to register the schema ISFC,

Type: **SCHE DCISFC**
Press: **Enter**

To register the schemas IRAB and IRSG,

Type: **SCHE DCIRAB**
Press: **Enter**

Use the list schema command, LSCHE, to verify the registered schema types and version numbers or to search the schemas for a specified key.

Commands

This section of the manual contains the McIDAS-X commands. The conventions used in documenting the commands are described below.

Interpreting Bold and Italicized Terms

Actual keyboard entries appear in BOLD type. You will type these entries exactly as they appear. Command names, some parameters, all keywords and examples are bolded. For example:

IGG MAKE 2 SUB 1

Variable entries, such as parameters, appear in *italics*. For example:

HELP *command*

If you want to list the on-line documentation for command CUR, type:

HELP CUR

Use capital letters and leave a space between each term/number in a command line.

Concatenating Commands

You can concatenate commands with semicolons. For example:

SF 3; EG 3; DF 101 3 EC MSN; MAP

Commands that use quote fields can only be concatenated if the quote field is substituted with curly brackets ({ }), for example: **ZA 3 15 {MCIDAS}; LA 100 110.** Entering **ZA 3 15 "MCIDAS; LA 100 110** won't work; it displays "MCIDAS; LA 100 110 as the text string.

Using the Alt Key

When you see an Alt entry, it means you will press two keys simultaneously. The Alt key is like the Shift key in that you hold it down while typing another key. For example,

Press: Alt B

means you should hold down the Alt key and press the B key.

Recognizing Screen Prompts

System prompts and responses look like this:

```
Boxed text displayed in this typestyle indicates a
screen message.
```

Interpreting Command Information

Most commands have Format, Default, Parameter, Keyword, Remark and Example sections. However, some commands have only a Remarks section. To better understand the information in each of these sections, see the sample command description on the next page.

Command Name

This line gives a brief description of the command's function.

Format

The format contains the command name along with any positional parameters and/or keywords that it needs to perform its function. Commands can have several formats. Enter **BOLDED** terms exactly as they appear in the command format. *Italicized* terms are variables. You must enter a value or option in place of them in the command. If a format is too long to fit on one line, the second line is indented.

Default

The default is the shortest useful version of the command. Below the default is a description of its function. If a command doesn't have a default, you must specify the parameters. Typing the letter X in a command tells McIDAS-X to use the default value for the parameter.

Parameters

Parameters are numbers or letters that provide information to a McIDAS-X command. To the right of each parameter is an explanation of its function. Enter parameters in the exact order specified in the command format. It is not always necessary to use every parameter. Enter **BOLDED** parameters exactly as they appear in the text. If a parameter is *italicized*, insert the appropriate number or letter in the command format. A quotation mark (quote field) is sometimes used to delineate a text string. The text string can be used as input to search a file, or to provide descriptive text to a command or database.

Keywords

Keywords further clarify a command function; they are optional. Keywords are from 1 to 6 characters, followed by an equals sign (or comma) and a value, e.g., **COLOR=3 LAT=20 40 UNIT=A** can be entered as **COLOR,3 LAT,20 40 UNIT,A**. Type text values exactly as they are listed with the keyword. Use as many keywords as you like in a single command format. Although keywords are listed alphabetically in the documentation, their order in the command line is not important. Just be sure they come after the parameters. To the right of each keyword is an explanation of its function. Most keywords may be truncated to three characters. For example, you can enter **COL** instead of **COLOR**, or **UNI** in place of **UNIT**.

Remarks

Additional information about the command is contained here.

See Also

Mentioned here are other related commands to reference.

Examples

One or more examples are provided for each command. If an example takes more than one line, the second line is indented. Below each bolded command line is an explanation of what the entry does.

& (Ampersand)

Recalls a previously entered command.

Remarks

The & command displays a previously entered command on the screen's command line. You can backtrack up to 20 commands by repeatedly typing the ampersand.

You can modify the command line before entering the command.

The ampersand command works in this manner only if you have not typed any other characters on the command line.

See Also

The caret (^) command tracks previously entered commands in the opposite direction.

^ (Caret)

Recalls previously entered commands.

Remarks

To recall commands in the direction opposite the ampersand (&),

Type: ^

Each press of the caret key backs up the command queue by one.

See Also

See the ampersand (&) command description on the previous page for more information.

? (Question Mark)

Lists the McIDAS-X command status.

Remarks

The question mark (?) command lists all McIDAS commands that are currently executing. The output format is shown below.

Header	Description
UID	user ID of the person who started the process
PID	process identification number to use when terminating a command
STIME	start time of the process
TIME	amount of CPU time used
CMD or COMMAND	command name with the extension .mx, along with the parameters used to start the command (These parameters are not the user entered parameters, but are used by the system.)

See Also

Use command KILL to stop commands. Do not kill commands SKED, TCPIP, IMPORT or COMM, as terminating these will halt communications and the scheduler.

/ (Slash)

Terminates a command.

Remarks

To terminate a command, enter a slash followed by the Process IDentification (PID) number. If you don't know the PID number, use the question mark (?) command to list it.

To determine the PID number,

Type: **?**

Then,

Type: ***/ PID number***
Press: **Enter**

Example

/ 23744
This entry terminates the command running under PID number 23744.

A

Advances one frame.

Remarks

To advance the frame position by one,

Press: **Alt A**

or

Type: **A**
Press: **Enter**

AA

Copies and displays a digital area.

Formats

AA *sarea darea frame locate station mag line ele [keywords]*
AA *sarea darea frame locate y-coord x-coord mag line ele [keywords]*

Default

AA *sarea darea*
This entry copies *sarea* to *darea* beginning at the upper-left corner of the area and provides a *darea* size equal to the current frame size. It is not displayed on an image frame.

Parameters

sarea source area number of the data

darea destination area number; it must be different than *sarea*

frame image frame number for display; the data in *darea* is displayed on the frame (default=does not display *darea*)
OPP displays the image on the frame opposite the current image frame

locate type of coordinates the area transfers and TV load use as a reference point (default=AU, meaning the area coordinates are displayed with the upper-left corner line and element); use one of these coordinate systems:
A area
E earth
I image

followed by one of these locations:
C centered
D lower-right corner
U upper-left corner

station station ID, e.g., MSN, DSM, 2C2; it must be preceded by EU, EC or ED

y-coord y-axis coordinate (default=upper-left corner of the area)

x-coord x-axis coordinate (default=upper-left corner of the area)

mag image blowup or blowdown factor; positive numbers blow up; negative numbers blow down; blowups repeat data values; blowdowns sample data (default=1)

line line number dimensioning *darea* (default=number of lines in the current frame)

ele element number dimensioning *darea* (default=number of elements in the current frame)

Keywords

ASIZE= **ALL** copies the entire area including all bands; do not use other keywords

BAND= band number to move, the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for GOES IR, 1 for POES)
ALL moves all bands if subsecting a multibanded area

EMAG= element only blowup or blowdown

GRAY= **NO** does not display a gray wedge (default)
YES adds a gray wedge to the bottom of the image
repeat inc start line
repeat brightness repetition factor (default=5)
inc if > 0, it increments black to white; if < 0, it increments white to black (default=2)
start starting brightness value (default=0)
line starting TV line (default=bottom of the image minus 10 lines)

IR= **1** moves the image documentation section (default=documentation section is stripped off)

LMAG= line only blowup or blowdown

Remarks

You cannot specify the keyword **ASIZE** and the parameter *locate* in the same command line.

The coordinates for displaying images are listed below.

Location	Y-coordinate	X-coordinate	Format
A	line	element	0 to 5 digits
E	latitude	longitude	DDD:MM:SS, DDD.fraction or station ID
I	line	element	0 to 5 digits

Examples

AA 101 2000 1 EC 38 90 - 4
This entry copies area 101 to area 2000 and displays the image on image frame 1, earth centering it at 38° N and 90° W. It has a blowdown factor of 4. Area 2000 is the size of the current frame, regardless of the size of area 101.

AA 101 2000 1 ASIZE=ALL
This entry copies the entire area 101 into area 2000 and displays the image on image frame 1.

AA 104 2000 10 EC 36 90 2
This entry copies area 104 into area 2000 and displays the image on image frame 10. It is centered on earth coordinates 36° N and 90° W. The brightness values are replicated to make a two times blowup.

AA 101 3000 OPP IU 5000 6000
This entry copies area 101 into area 3000 and displays it on the image frame opposite the displayed frame. The area is moved and displayed by upper-left corner image coordinates 5000 and 6000.

AA 110 5000 OPP EC MSN
This entry copies area 110 into area 5000. It displays the area on the opposite image frame, centering it on Madison, WI.

AAMAP

Remaps an area into a Mercator or polar stereographic projection.

Format

AAMAP *sarea darea frame projection clat clon res line ele [keywords]*

Default

AAMAP *sarea darea* **X** *projection clat clon*
This entry remaps *sarea* into the specified projection, centering it on *clat* and *clon*. It stores the remapped projection in *darea* but does not display the remapped image.

Parameters

sarea	source area number of the data	
darea	destination area number; it must be different than *sarea*	
frame	image frame number for display; the data in *darea* is displayed on this frame (default= does not display the image)	
projection	**MERC**	remaps to a Mercator projection
	PS	remaps to a polar stereographic projection
clat	center latitude	
clon	center longitude	
res	remapped image resolution in kilometers (default=1)	
line	number of lines in *darea* (default is workstation dependent)	
ele	number of elements in *darea* (default is workstation dependent)	

Keywords

BAND=	band number for multiband *sarea*
SPLINE=	spline size (default=20)

Remarks

Command AAMAP remaps any navigated image to a polar stereographic or Mercator projection.

Use keyword SPLINE to improve the quality of the remapped image, especially along the edges. Choosing a spline size smaller than the default of 20 may increase the quality, but will also increase the time and cost of running the AAMAP command.

Examples

AAMAP 4960 6848 2 MERC 35 90 4
This entry remaps area 4960 into a Mercator projection centered on 35° N and 90° W. The new image, which has a resolution of 4 km, is stored in area 6848 and displayed on image frame 2.

AAMAP 7500 7501 5 PS 70 140 SPLINE=5
This entry remaps area 7500 into a polar stereographic projection with a spline size of 5 centered on 70° N and 140° W. The new image, which has a 1 km resolution, is stored in area 7501 and displayed on image frame 5.

AVGI

Reduces image resolution by averaging.

Format

AVGI *sarea darea lres eres [keyword]*

Default

AVGI *sarea darea*
This entry averages *sarea* by one line and element, and places the new area in *darea*.

Parameters

sarea	source area to average
darea	destination area of the averaged data
lres	number indicating the resolution reduction for lines
eres	number indicating the resolution reduction for elements (default=*lres*)

Keyword

BAND=	band number from multibanded areas (default=lowest numbered band)

Remark

The area size cannot exceed 26000 elements.

Example

AVGI 10 20 4
This entry blows down area 10 four times by averaging pixel values. The new area number is 20.

B

Backs up one frame position.

Remarks

To back up the frame position by one,

Press: Alt B

or

Type: B
Press: Enter

BATCH

Executes McIDAS-X commands serially from a text file.

Formats

BATCH *[keyword] "file*
BATCH *par1 par2 . . . parn [keyword] "file*

Default

No default; you must specify the file name.

Parameters

"file	name of the text file containing the commands
par1 . . . n	value to substitute in the command text wherever the notation % *X* appears

Keyword

DEST=	name of the text file to write commands into instead of running them; the file contains the list of expanded commands and can be used by other programs
C	directs commands to the screen for viewing only

Remarks

The source file containing the commands must be in the text format (created with a text editor) and reside in the /mcidas/data subdirectory, unless you enter a fully qualified name that includes the path. The source file must be in uppercase.

Commands are performed serially, i.e., each must finish before the next one begins. This is NOT true, however, for commands beginning with a period (.). These commands are sent to the mainframe where they are performed in random order. BATCH does not wait for their completion before going to the next command line. If a command aborts, the entire BATCH file is abandoned at that point.

Normal string table substitution may be used within each command and will take place as the command is executed.

Stay in the local mode (H key off) while BATCH is running; otherwise all commands will be sent to the mainframe.

Example

If you have a BATCH file that contains the following command line:
DF %1 %2 EC MSN
entering this McIDAS-X command: **BATCH 101 3** *"file*
will result in: **DF 101 3 EC MSN.**

C

Lists an image frame's directory.

Remarks

To list the current image frame's directory,

Press: **Alt C**

or

Type: **C**
Press: **Enter**

The output looks like this:

```
FRM SS YYDDD HHMMSS BAND LINE ELEM LMAGN EMAGN AREA
  5 61 91042  91300    4 2923   41  1/ 3  1/ 5    1
```

Each column is described below.

Column	Meaning
FRM	image frame number
SS	sensor source
YYDDD	year and Julian day
HHMMSS	image time
BAND	band number
LINE	first (uppermost) image line loaded in the image frame
ELEM	first (leftmost) image element loaded in the image frame
LMAGN	line magnification; the first number is the blowup factor of the displayed data relative to the resolution of the data in the area; the second number is the blowdown factor of the displayed data relative to the best sensor resolution
EMAGN	element magnification; see LMAGN
AREA	area number

If the area number is -1, the frame contains an image loaded from the mainframe. To list the mainframe image frame directory, type **Alt C** in the host mode. If an image is loaded from a workstation, its frame directory will differ from the mainframe; the mainframe commands have no knowledge of the local workstation frame directory.

CA

Modifies the area directory.

Format

CA *area par1 par2 . . . par11 [keywords] "text*

Default

CA *area par1 . . . par11*
This entry changes the parameters in the *area* directory. Insert the letter X in places where you don't want to change the parameter.

Parameters

area	digital area number for the directory to be changed
par1 . . . par 11	new directory values; insert the letter X to indicate no change
"text	text to replace the memo portion of the area directory as seen by typing the command line: LA *area* FORM=EXP; quotes are mandatory

Keywords

BAND=	replaces the band sequence; the range is 1-32 NA means not applicable
CAL=	changes the length of the calibration section of the prefix; must be a multiple of 4 or 0
CODE=	changes the validity code
CTYPE=	changes the calibration type
DOC=	changes the length of the documentation section of the prefix; must be a multiple of 4 or 0
LEV=	changes the length of the level section of the prefix; must be a multiple of 4 or 0
NAV=	*data nav* changes the byte offset for the image data and navigation block
PFX=	changes the total length of the line prefix; must be the sum of the fields that can be changed with the keywords CAL=, DOC= and LEV=; add 4 if the validity code is present
STYPE=	changes the source type

Remarks

Parameters entered with the CA command replace the current values listed by typing: **LA** *area*.

> **Caution!**
> DO NOT use the CAL=, CODE=, DOC=, LEV=, NAV= and PFX= keywords unless you are familiar with the area data structure and knowledgeable about the satellite data.

Example

To change the line and element coordinates from 2162 and 9229 to 2100 and 9000, you must first list area 2. To do this,

Type: **LA 2**
Press: **Enter**

The system displays the following information on the screen.

```
area ss yyddd hhmmss lcor ecor lres eres zres lsiz esiz zsiz bands
   2 32 89128 164600 2162 9229    1    1    1  500  640     1   NA
```

To change the line and element coordinates,

Type: **CA 2 X X X 2100 9000**
Press: **Enter**

The area directory's LCOR and ECOR are changed to 2100 and 9000, respectively. The system displays the information below. The keywords corresponding to the output are shown in the table that follows.

```
area ss yyddd hhmmss lcor ecor lres eres zres lsiz esiz zsiz bands
  2  32 89128 164600 2100 9000    1    1    1  500  640     1   NA
  proj: 0  created: 89128 173302  memo: AAA-MSI TO VIS IN REAL TIME
  type: VISR        cal type: BRIT
  area offsets:       data= 768  navigation= 256  calibrations= 0
  doc length:  0   cal length: 0    lev length: 0    PREFIX= 0
  valcod:          0  zcor: 1    band-8:  NA  reel#: 0
  start yyddd: 89128   start time: 164602   start scan: 101
```

Keyword	Output	Keyword	Output
CAL=	cal length	**LEV=**	lev length
CODE=	valcod	**NAV=**	data, navigation
CTYPE=	cal type	**PFX=**	PREFIX
DOC=	doc length	**STYPE=**	type

CCODE

Lists country codes.

Format

CCODE *country*

Default

CCODE
This entry lists all country codes.

Parameter

country country to list (default=all)

Remarks

If *country* is two characters, CCODE looks for the one country whose code matches it. If one character or more than two characters are specified, all string matches are found.

Examples

CCODE UK
This entry lists the country with UK as its country code.

CCODE FRANCE
This entry lists the country code for France.

CCODE ISLAND
This entry lists all countries that have the word ISLAND in them.

CCODE Z
This entry lists all country codes and countries that contain the letter Z.

CLEAR

Clears output from text windows.

Format

CLEAR *bwindow ewindow*

Default

CLEAR
This entry clears all text from the current text window.

Parameters

bwindow	number of the beginning text window to clear (default=current)
ewindow	number of the ending text window to clear (default=*bwindow*)

Remarks

The valid range for *bwindow* and *ewindow* is determined by the number of text windows allocated at the startup of the McIDAS-X session.

Examples

CLEAR 4
This entry clears text window 4.

CLEAR 0 3
This entry clears text windows 0, 1, 2 and 3.

CM

Circulates the graphics color table.

Format

CM *blevel elevel [keywords]*

Default

No default; you must specify the parameters.

Parameters

blevel	beginning graphics color level to loop (default=1)
elevel	ending graphics color level to loop (default=*blevel*)

Keywords

GO=	**YES**	starts looping immediately
	NO	does not loop immediately (default)
INT=		timing interval (looping speed) in milliseconds; the range is 5 to 5000 (default=100)
TIMOUT=		sets the timeout (default=500 steps)

Remarks

CM circulates the graphics colors through the specified graphics levels. Press the middle mouse button to begin, the right button to pause, and both buttons to stop the program. CM remains active until you press both mouse buttons or the program times out.

Examples

CM 1 3 INT=500
When you press the middle mouse button, the graphics will loop between color levels 1 and 3, pausing 500 msec (1/2 sec) between steps.

Time (sec)		0	1/2	1	1-1/2 . . .
Level	1	red	blue	green	red . . .
	2	green	red	blue	green . . .
	3	blue	green	red	blue . . .

CM 2 6
This entry loops graphics color levels 2 to 6.

COTV

Contours the digital data within the cursor and produces a 2- or 3-dimensional plot.

Format

COTV *interval unit [keywords]*

Default

COTV

This entry contours the entire brightness range of the digital data within the cursor with an interval of 1 count. The 2-dimensional plot is plotted in graphics color level 1.

Parameters

interval contour interval number; this parameter is not used with a 3-dimensional plot (default depends on *unit* and RANGE= values)

unit

BRIT	brightness value (default)
RAD	radiance
TEMP	temperatures
RAW	value stored in the area

or any valid unit that is output by command D

Keywords (General)

BAND= band number of the area; the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=current image band)

COLOR= graphics color level (default=1)

DIM=

2	draws a 2-dimensional display within the cursor (default)
3	draws a 3-dimensional mesh where height is related to brightness

OPTION=

	digital data counts (default)
G	2-dimensional gradient

RANGE= *beg end* range of values to contour (default=0-255)

Keywords
(2-Dimensional Only)

LMOD=		contour labeling interval (default=2, labels alternate lines)
SIZE=		height of the labels in pixels (default=6)
SMO=		contour smoothing parameter (default=20)

Keywords
(3-Dimensional Only)

ELE=	*min max*	element limits for the plot (default depends on frame size)
ELV=		elevation viewing angle (default=20 degrees)
LINE=	*min max*	line limits for the plot (default depends on frame size)
PAN=		graphics panel number; the range is 1-4
ROT=		rotation angle (default=45 degrees)

Remarks

You may need to blow up the image resolution when using 2-dimensional contours. Otherwise, the plot inside the cursor may be too cluttered to read. You can use a maximum of 10,000 pixels within the cursor when plotting.

The maximum cursor size is 63 x 63 pixels.

The cursor must be completely inside the image window.

Examples

COTV 3 COLOR=3
This entry contours the data inside the cursor every 3 counts in graphics color level 3.

COTV DIM=3
This entry draws a 3-dimensional mesh of the data within the cursor.

CUR

Defines cursor size, type and color.

Formats

CUR *height width type color*
CUR *height width type blue green red*
CUR *option*

Default

CUR
This entry creates a 31 x 31 red crosshair cursor.

Parameters

height cursor height in pixels; even size is rounded up to odd size; if entered as X, the size does not change; maximum is 63 (default=31)

width cursor width in pixels; even size is rounded up to odd size; maximum is 63 (default=*height*)

type

BOX	box cursor
XHAIR	crosshair cursor (default)
XBOX	crosshair inside box cursor
SOLID	solid box cursor

color color name from the color palette; see the Remarks (default=RED)

blue blue color intensity; the range is 0-255 (default=0)

green green color intensity; the range is 0-255 (default=0)

red red color intensity; the range is 0-255 (default=255)

option

ON	makes the cursor visible (default)
OFF	makes the cursor invisible

Remarks

CUR is a reflected command, meaning it runs locally even if preceded by a dot (mainframe command).

To list palette colors and red, green and blue intensities, enter: **GU COLORS**.

The *color* default only applies when entering CUR with no positional parameters. For all other command formats, the default is the current color.

Even cursor sizes are always rounded to the next odd number. It is not possible to create even-sized cursors.

Examples

CUR 21
This entry makes the cursor 21 x 21 pixels.

CUR 20 40 BOX GREEN
This entry changes the cursor to a green box, 21 x 41 pixels.

CUR 40 30 XBOX BLUE
This entry makes a 41 x 31 pixel, blue, crosshair inside box cursor.

CUR X 53 XHAIR
This entry makes a crosshair cursor. The width of the cursor is 53, the height and color do not change.

CUR 32 25 BOX 200 80 120
This entry makes a 33 x 25 box cursor that is colored by the intensities for blue, green and red as 200, 80 and 120, respectively.

CUR OFF
This entry makes the cursor invisible.

CW

Fills or erases the graphics within the cursor.

Format

CW *level frame height width*

Default

CW
This entry erases the graphics within the cursor.

Parameters

level	graphics color level; the range is zero to the maximum available for the display type (default=0 to erase all graphics within the cursor)
frame	graphics frame number (default=current)
height	height of the area to erase in pixels (default=cursor height)
width	width of the area to erase in pixels (default=cursor width)

See Also

Use command EG to erase the entire graphics frame.

Examples

CW 1 3
This entry fills the cursor with graphics color level 1 on graphics frame 3.

CW 6 2 50 30
This entry fills a 50 x 30 box centered at the cursor with graphics color level 6 on graphics frame 2.

D

Lists the digital values at the cursor center.

Remarks

To list the digital brightness value and other appropriate units of the image pixel under the cursor's center,

Press: **Alt D**

or

Type: **D**
Press: **Enter**

The D command lists area number, area coordinates, image coordinates, Raw digital values, brightness values, radiance, blackbody temperature, or other units appropriate to the data source.

This command does not execute if the area is not on your disk.

Any 2-byte IR or dwell sound GOES data converted to 1-byte data, via command SENAA or AA, assigns missing temperature or brightness values of zero. Brightness values of 255 also indicate missing values. This includes data off the earth edge or missing lines.

See Also

Command OD lists the digital area inside the cursor.

DF

Displays a digital area on an image frame.

Formats

DF *area frame locate y-coord x-coord mag repeat [keywords]*
DF *area frame locate station mag repeat [keywords]*

Default

DF *area frame*
This entry displays the *area* digital data on the image *frame* number, displaying the upper-left corner of the area in the upper-left corner of the image frame.

Parameters

area digital area number of the data to display

frame image frame number to display
OPP displays the image on the frame opposite the current frame

locate coordinate type for loading images (default=AU, meaning the area coordinates are displayed with the upper-left corner line and element); use one of these coordinate systems:
A area
E earth
I image
T TV (displays the image using the cursor location)

followed by one of these locations:
C centered
D lower-right corner
U upper-left corner

y-coord y-axis coordinate (default=upper-left corner of the area)

x-coord x-axis coordinate (default=upper-left corner of the area)

station station ID, e.g., MSN, DSM, 2C2; must be preceded by EU, EC or ED

mag image blowup or blowdown factor (default=1)

repeat number of consecutive frames loaded from consecutive areas (default=1)

Keywords

BAND= area band number; the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for multibanded GOES, 4 for POES)

EMAG= element blowup or blowdown (default=1)

EU= *name* name of the enhancement to apply to the image

GRAY= **NO** doesn't display a gray wedge (default)
YES adds a gray wedge to the bottom of the image using the defaults below
repeat inc start line
repeat brightness repetition factor (default=5)
inc if > 0, it increments black to white; if < 0, it increments white to black (default=2)
start starting brightness value (default=0)
line starting TV line (default=the number of lines in that particular frame minus 23 lines)

INC= *ainc finc* area and frame increments for repeat parameters

LMAG= line blowup or blowdown (default=1)

SF= **YES** automatically sets the image frame to the frame to be loaded prior to the display (default=NO)

SU= name of the stretch table to apply to the image

UPDATE=ON checks to see if the image to be loaded is already displayed on the frame; if the image is already displayed, it won't be redisplayed (default=OFF)

Remarks

The coordinates for displaying images are listed below.

Location	Y-coordinate	X-coordinate	Format
A	line	element	0-5 digits
E	latitude	longitude	DDD:MM:SS, DDD.fraction or station ID
I	line	element	0-5 digits
T	raster	pictel	0-3 digits

DF displays images from areas up to 10,000 lines and elements in size.

Examples

DF 1 10 EC 36.5 90.5 -4 2
This entry loads areas 1 and 2 into image frames 10 and 11, respectively. The images are centered at 36½° North and 90½° West, with a 4x blowdown.

DF 4 2 ED MSN
This entry loads area 4 into image frame 2 with Madison, WI, positioned in the lower-right corner.

DF 1 OPP GRAY=Y
This entry loads area 1 into the image frame opposite the displayed frame and displays a gray wedge. It loads from the upper-left corner of area 1.

DF 3 2 EC STL SU=TEMP
This entry displays area 3 on frame 2, centered on St. Louis. Table TEMP, which is created with the SU command, is applied to the image as it is displayed.

DIST

Finds the distance on a navigated frame.

Formats

DIST CIR *angle inc distance [keywords]*
DIST ROT *angle inc distance [keywords]*
DIST STE *angle din distance [keywords]*
DIST E *lat lon [keywords]*
DIST I *line ele [keywords]*
DIST T *raster pictel [keywords]*

Default

DIST
This entry finds the distance between the initial cursor position and successive selected points on a navigated frame.

Parameters

CIR	draws a circle around the initial cursor location beginning at a specified distance and angle
ROT	draws all or part of a circle around the initial cursor location beginning at a specified distance and angle
STE	steps the cursor away from the initial cursor location at a specified distance and angle
E	steps the cursor away from the initial cursor location by the specified latitude and longitude increments
I	steps the cursor away from the initial cursor location by the specified line and element increments
T	steps the cursor away from the initial cursor location by the specified raster and pictel increments
angle	moves the cursor away from the original location by this angle, in degrees (default=0)
inc	increment (in degrees) to shift the cursor along its circular path
distance	distance to move the cursor from its original location
din	increment to step the cursor along its straight-line path
lat	degrees of latitude to move the cursor; northward is positive

lon degrees of longitude to move the cursor; westward is positive

line number of image lines to move the cursor; downward is positive

ele number of image elements to move the cursor; rightward is positive

raster number of TV lines (raster) to move the cursor; downward is positive

pictel number of TV elements (pictels) to move the cursor; rightward is positive

Keywords

COLOR= graphics color level of the characters (default=2)

SIZE= height of the plotted characters in pixels (default=5)

SYM=

.	a period marks off the distances (default)
+	a plus sign marks off the distances
*	an asterisk marks off the distances
o	a lowercase letter O marks off the distances

UNIT=

KM	measures distance in kilometers (default)
MI	measures distance in statute miles
NM	measures distance in nautical miles

Remarks

Command DIST will not execute unless the satellite image is navigated or a MAP command is run.

Each cursor location that you mark on the graphics frame is indicated by a period (default) or a symbol chosen with keyword SYM. A symbol is plotted on the graphics frame at the new cursor location each time you press the middle mouse button.

DIST runs interactively when specified with no parameters or with the ROT, STE, E, I or T parameter.

Examples

Position the cursor at the point on a navigated frame that is the starting point of the calculation. Then,

Type: **DIST**
Press: **Enter**

The program replies:

```
Press MIDDLE mouse button to measure point.
Press RIGHT mouse button to exit DIST.
```

Move the cursor to the point where you want the distance measured. Press the middle mouse button. The distance from the initial cursor location appears on the screen. Repeat this sequence to measure the distance from the initial cursor location to other points.

DIST CIR 45 30 100 SYM=*
This entry draws a circle of asterisks on the graphics frame 100 km away from the original cursor location beginning at angle 45. The circle contains 12 asterisks since the increment is 30 degrees.

DIST ROT 90 15 200 UNIT=NM SYM=* SIZE=20 COLOR=4
This entry draws an arc or circle of asterisks on the graphics frame 200 nautical miles away from the original cursor location, beginning at an angle of 90°. The asterisks are 20 pixels high in color level 4.

DMAP

Lists information about files in the mcidas/data subdirectory.

Formats

DMAP *string*
DMAP *bchar echar*

Default

DMAP
This entry lists information about all files in the workstation's mcidas/data subdirectory.

Parameters

string string of characters in the file name to search for; can include a wild card (*) (default=lists all files)

bchar match on file names starting with this character (default=all)

echar match on file names starting with this character where *echar* is the end of a character range (default=*bchar*)

Remarks

Command DMAP lists in the ASCII collating sequence.

The name, size, date, permissions and node information is given for each file in the listing.

The asterisk (*) can be used as a wild card character only when *string* is specified. It is not valid in a range *bchar* to *echar*.

If you specify one string, all files beginning with that character string are listed. If you specify *bchar* and *echar*, all files beginning with *bchar* through *echar* are listed.

Examples

DMAP AREA0001
This entry displays information about the file AREA0001.

DMAP A D
This entry lists the files beginning with letters A, B, C and D.

DMAP *.PIX
This entry lists all file names with the extension PIX.

DMAP AREA
This entry lists all file names beginning with the string AREA.

DOQTL

Selectively deletes MD files.

Format

DOQTL *bfile efile cutoff*

Default

No default; you must specify the parameters.

Parameters

bfile beginning MD file in the range (no default)

efile ending MD file in the range (no default)

cutoff maximum number of MD files kept on the system, in days (no default)

Remarks

Command DOQTL allows you to delete unwanted MD files on the workstation according to the specified cutoff. If *cutoff*=4, only the MD files for the last four days are retained on the workstation; the rest are deleted. This assumes that the MD files have the same numbering as that on the mainframe, i.e., MD files 1 to 10 are for ISFC schema data, MD files 11 to 20 are for IRAB schema data, etc.

Example

DOQTL 1 30 2
If the current day is 91223, this entry saves MD files 2, 3, 12, 13, 22 and 23, and deletes the rest.

DOSTOLW

Converts text format files to LW format files.

Format

DOSTOLW *sfile dfile* **R**

Default

No default; you must specify the files.

Parameters

sfile	source text file name and extension
dfile	destination LW file name; it must be different than *sfile*
R	replaces the destination file if it already exists

Remarks

The LW file format is an 80-character card image, blank padded as needed, with no carriage returns.

Example

DOSTOLW SFCPLT.RUN SFCPLT

This entry converts the text file named SFCPLT.RUN to an 80-character card image format LW file named SFCPLT.

DR

Defines the dwell rates for frame looping.

Formats

DR *rate1 rate2 . . . raten*
DR *repeat***rate repeat***rate . . .*
DR INI
DR AUTO

Default

DR
This entry lists the current dwell rates within the loop.

Parameters

rate1 . . . n	dwell rate for each frame (no default)
repeat	number of frames for which the rate applies (no default)
INI	initializes the dwell rates to 9 units for the first frame and 6 units for all subsequent frames
AUTO	assigns the longest dwell to the latest image

Remarks

The rate is in units of 1/15 second. The last frame assigned a rate determines the rate for all subsequent frames in that loop.

You can mix the command formats. For example, **DR 3 3 5*8 3** is the same as **DR 3 3 8 8 8 8 8 3**.

Set the dwell rates to compensate for irregularly spaced image times. The workstation does not differentiate graphics from image frames.

Examples

DR 12 6 6 12
This entry sets dwell rates to 6 for the second and third frames, and 12 for the first, fourth and all subsequent frames of the loop.

DR 3*5 4 3
This entry sets dwell rates to 5 on the first three frames, 4 on the fourth frame, and 3 on the fifth and all subsequent frames of the loop.

DR 7
This entry sets all frames to dwell rate 7.

DR AUTO
This entry sets the dwell rate of the latest image time to the longest dwell rate of the loop. Use it with McIDAS-MVS command SEQ to automatically maintain dwell rates of real-time image loops. If the dwell rates of all frames are equal, this entry has no effect.

E

Lists the earth coordinates at the cursor center.

Remarks

To list the earth coordinates at the cursor center,

Press: **Alt E**

or

Type: **E**
Press: **Enter**

Command E lists:

- the latitude and longitude of a pixel on a navigated frame in the format HH:MM:SS
- satellite image line and element coordinates
- TV raster and pictel coordinates; position raster=1 and pictel=1 is the upper-left corner of the screen

The last displayed graphics or image is used.

The output format of E is shown below.

Frame	Latitude	Longitude	Tvline	Tvelem	Line	Elem
nn	DDD:MM:SS	DDD:MM:SS	nnnn	nnnn	nnnn	nnnn

EB

Black and white contrast stretching.

Format

EB *inlo inhi outlo outhi*

Default

EB
This entry invokes interactive mouse-controlled contrast stretching. Press the right mouse button to end the process, leaving the current enhancement.

Parameters

inlo	lowest input brightness value (default=0)
inhi	highest input brightness value (default=255)
outlo	new low brightness value (default=0)
outhi	new high brightness value (default=255)

Remarks

To save the current enhancement, use command **EU SAVE**.

The input brightness values correspond to the brightness levels of the data on the screen. Input brightness levels below *inlo* and above *inhi* are not changed. *Inlo* is output at level *outlo* and *inhi* at level *outhi*. Brightness values between *inlo* and *inhi* are output at levels determined by linear interpolation between *outlo* and *outhi*.

When using the mouse-controlled version, moving the cursor to the right along the x-axis decreases the upper brightness bound (from level 255) to be enhanced as white (255). Moving the cursor upward along the y-axis increases the lower brightness bound (from level 0) to be enhanced as black (0).

Examples

EB 50 150 0 255
This entry rescales input brightness level 50 as 0 (black) and input brightness level 150 as 255 (white). The 101 counts from 50 to 150 are linearly stretched along the 256 counts from 0 to 255.

EB 30 255 50 200
This entry rescales input brightness level 30 as 50, and input brightness level 255 as 200. The 226 counts from 30 to 255 are linearly stretched along the 151 counts from 50 to 200.

ECHO

Displays a line of text on the workstation.

Format

ECHO "*text*

Default

ECHO
This entry echoes a blank line.

Parameter

"*text* the text to display on the screen; the quote is mandatory

Example

ECHO "This is a test
This entry prints 'This is a test' on the text window.

EG

Erases frames.

Format

EG *bframe eframe*

Default

EG
This entry erases the current frame.

Parameters

bframe beginning frame in the range to erase (default=current)

eframe ending frame in the range to erase (default=*bframe*)

Remarks

EG erases both the image and graphics, leaving an empty (black) frame.

Example

EG 6 12
This entry erases frames 6 through 12.

EU

Enhancement utility.

Formats

EU COLORS
EU DEL *name*
EU LIST *string*
EU MAKE *lo hi bcolor ecolor bframe eframe*
EU MAKE *lo hi bcolor ecolor [keyword]*
EU MAKE *lo hi blo bhi glo ghi rlo rhi bframe eframe*
EU MAKE *lo hi blo bhi glo ghi rlo rhi [keyword]*
EU REST *name bframe eframe*
EU REST *name [keyword]*
EU SAVE *name*
EU TABLE *name*

Default

EU
This entry restores the default enhancement to the current frame.

Parameters

COLORS	lists the defined colors
DEL	deletes a saved enhancement
LIST	lists the saved enhancements (default=lists all enhancements on the workstation)
MAKE	sets the enhancement
REST	restores a saved enhancement
SAVE	saves the current enhancement
TABLE	lists the values of an enhancement (default=current)
name	enhancement name (default=default enhancement)
string	lists only the enhancements beginning with this character string
lo	lowest brightness value; the range is 0-255 (default=0)
hi	highest brightness value; the range is 0-255 (default=255)
bcolor, ecolor	color name range

bframe	beginning image frame (default=current image frame)
eframe	ending image frame (default=*bframe*)
blo	lowest blue intensity value; the range is 0-255 (default=0)
bhi	highest blue intensity value; the range is 0-255 (default=0)
glo	lowest green intensity value; the range is 0-255 (default=0)
ghi	highest green intensity value; the range is 0-255 (default=0)
rlo	lowest red intensity value; the range is 0-255 (default=0)
rhi	highest red intensity value; the range is 0-255 (default=0)

Keyword

LOOP=	YES	applies the enhancement to all frames defined in a loop
	NO	does not apply the enhancement to the loop (default)

Remarks

The files created when you execute an **EU SAVE** are transportable to any UNIX workstation.

Examples

EU LIST
This entry lists all the saved enhancement tables on the terminal.

EU LIST VAP
This entry lists all the saved enhancement tables beginning with VAP.

EU MAKE 20 75 255 255 0 0 255 255
This entry color enhances all image pixels with brightness values between 20 and 75 to solid magenta.

EU MAKE 100 200 RED YELLOW 1 3
This entry color enhances the image pixel brightness values between 100 and 200 on image frames 1 to 3 from red to yellow.

EU SAVE VAPOR
This entry saves the enhancement on the current frame to a file named VAPOR.

EU REST VAPOR LOOP=YES
This entry restores an enhancement called VAPOR to all frames defined in a loop.

EU TABLE
This entry lists the values of the current enhancement.

EXIT

Shuts down a McIDAS-X session and associated windows.

Remarks

Use EXIT to shut down a McIDAS-X session and close its associated windows. This method is preferred over manually closing down the windows with the mouse buttons.

To return to McIDAS-X after an EXIT, type the following entry from the UNIX command prompt.

Type: **mcidas**
Press: **Enter**

F

Displays the workstation state.

Remarks

To list the workstation state,

Press: **Alt F**

or

Type: **F**
Press: **Enter**

This command is reflected back to the workstation.

The output format of F is shown below.

```
Video Status for Your Workstation
                                Frame(s)
Number Available                nn
Current                         nn    (Opp=nnn)
Loop Bounds via LB              n to n
Random Looping via LS           Yes/No
Visible K toggle                Yes
Looping (L toggle)              Yes/No
Cursor parameters: Size =       nnn/nnn  Type =cursor type
       Center position =        nnn/nnn  Color=color

Image frames nn-nn with imbedded graphics are nnnn BY nnnn.
```

If you use the LB command to set loop bounds, the table indicates the loop bounds set. If you use the LS command to set loop bounds, random looping is in effect. In this case, enter **LS** to list the current loop definition.

The final lines of the output format describe the number and size of the image frames. Frames of different sizes created with the MAKFRM command will be output with their corresponding line and element size.

See Also

Use commands K and L to modify the loop control system. Command K toggles the image on/off. L toggles the image looping on/off.

GD

Sets graphics display parameters.

Formats

GD INI
GD *width dlength gcolor glength*

Default

GD
This entry lists the current graphics parameters.

Parameters

INI	initializes the graphics parameters to their logon values
width	graphics line width in pixels; the range is 1-64 (default=last value set; at logon the default is 1)
dlength	length of the dashes in a line; the range is 0-64 (default=last value set; at logon the default is 10 pixels)
gcolor	graphics color level of the gaps in dashed lines (default=last value set; at logon the default is 255, transparent)
glength	length of the gaps in dashed lines; the range is 0-64 (default=last value set; at logon the default is 10 pixels)

Example

GD 3 5 3 5
This entry sets the line width to 3 pixels. The length of dashes and gaps in the dashed lines is 5 pixels. The color of the gaps is set to graphics color level 3.

GRDIMG

Converts a grid to a digital area.

Format

GRDIMG *grid area rmag cmag [keywords]*

Default

GRDIMG *grid area*
This entry places the *grid* in the digital *area* using the minimum and maximum grid values to determine the digital value range.

Parameters

grid source grid number

area destination area number generated by GRDIMG

rmag grid row magnification factor (default=1)

cmag grid column magnification factor (default=1)

Keywords

COL= *beg end* beginning and ending column limits (default=1 *maximum column*)

GRIDF= grid file number (default=current file set by **IGU SET** *gridf*)

RANGE= *loval hival britlo brithi* specifies the range of grid values
loval lowest grid data value (default=minimum value)
hival highest grid data value (default=maximum value)
britlo lowest digital brightness value (default=0)
brithi highest digital brightness value (default=255)

ROW= *beg end* beginning and ending row limits (default=1 *maximum row*)

Remarks

Use keyword COL to specify a subset. The maximum element size is 2000. Use a smaller column magnification or specify keyword COL if an error results.

Example

GRDIMG 1 5000 RANGE=270 300

This entry places grid 1 in area 5000. The grid is 20 by 20 and contains temperatures (K). The temperatures from 270 to 300 K take on digital values ranging from 0 to 255. All values below 270 are 0; those above 300 are 255.

GU

Graphics utility.

Formats

GU COLORS
GU DEL *name*
GU LIST *string*
GU MAKE *level color bframe eframe*
GU MAKE *level blue green red bframe eframe*
GU REST *name bframe eframe*
GU SAVE *name frame*
GU TABLE *name*

Default

GU
This entry restores the default graphics table to the current graphics frame.

Parameters

COLORS	lists the predefined colors supplied with McIDAS
DEL	deletes a graphics file
LIST	lists the saved graphics files (default=lists all graphics files on the workstation)
MAKE	sets the graphics levels
REST	restores a saved graphics file
SAVE	saves the current graphics table to a file
TABLE	lists the values in a graphics file (default=current table)
name	graphics file name; don't include an extension, e.g., .GRX
string	lists only the graphics files beginning with this character string
level	graphics color level number (default=0)
color	predefined color name
bframe	beginning graphics frame number (default=current)
eframe	ending graphics frame number (default=*bframe*)

blue blue color intensity; the range is 0-255 (default=0)

green green color intensity; the range is 0-255 (default=0)

red red color intensity; the range is 0-255 (default=0)

frame graphics frame number (default=current)

Examples

GU MAKE 7 WHITE 1 3
This entry sets graphics color level 7 to white for graphics frames 1 to 3.

GU TABLE
This entry lists the values in the current graphics table.

H

Toggles the host command entry mode on and off.

Remarks

To toggle the host command entry mode on and off,

Press: **Alt H**

or

Type: **H**
Press: **Enter**

Most commands will execute on the host when the H key is toggled on. Some commands, primarily loop controls and enhancement commands, are either intercepted by the workstation or reflected by the host and run on the workstation.

The system automatically inserts a period (.) before any command that you manually enter while in the host mode.

While in the local mode, precede any host command with a period or it will attempt to run locally.

You must enter a period before all commands in the scheduler or string table that will run on the host.

HELP

Lists on-line documentation.

Format

HELP *command*

Default

HELP
This entry lists a one-line description of each McIDAS-X command in the ~mcidas/src directory.

Parameter

command McIDAS-X command name

Remark

McIDAS searches for the command helps in these directories in the following order:

- directory specified with the MCPATH environment variable
- ../src directory of the current user
- ~mcidas/src directory

After setting the MCPATH environment variable, you must exit the McIDAS session and restart McIDAS to put the setting into effect.

To list mainframe command documentation, precede HELP with a period, e.g., .HELP LA.

See Also

For more information about commands, see the McIDAS Reference Manual.

Example

HELP CUR
This entry lists the on-line documentation for the McIDAS-X command CUR.

IGG

Grid utility.

Formats

IGG DEL *bgrid egrid [keywords]*
IGG LIST *bgrid egrid [keywords]*
IGG GET *sgridf bgrid egrid dgridf bgrid*
IGG MAKE *grid1 option1 . . . gridn optionn [keywords]*

Defaults

IGG LIST
This entry lists all the grids in your workstation's default grid file.

IGG DEL
This entry deletes grid one in the default grid file.

Parameters

DEL deletes grids

LIST lists grids

GET moves grids from one file to another or within the same file

MAKE arithmetic operations performed on the grids; see *option* below

bgrid beginning grid number

egrid ending grid number

sgridf source grid file number (default=from **IGU SET** *gridf*)

dgridf destination grid file number

grid1..n a grid number

option1..n

ABV creates a grid of vorticity when the grid is u-comp (grid + 1 = v - comp) with the coriolis force; the second grid in the command is not used; units are 10^{-5} sec $^{-1}$ (see keyword V=)

ADD adds grids on a point-by-point basis, or adds a constant to a grid (see the Remarks)

ADV advects the parameter specified as the second grid by the wind of the first grid; u-comp assumes grid + 1= v - comp (see keyword V=)

AVG averages grids

CHGT changes the values greater than the value of the second grid

CHLT changes the values that are less than the value of the second grid

COM compares two grids for overlapping values; for a threat score, the second grid should be followed by two numbers that specify the range of values to include, e.g., **MAK 12 COM 18 -500 500**

COR creates a grid of the coriolis force using the boundaries of *grid1*

DIV divides a grid by another grid or a constant (see the Remarks)

DSH for deformation shear when the grid is u-comp (grid + 1 = v - comp); the second grid is not used (see keyword V=)

DST for deformation stretch when the grid is u-comp (grid + 1 = v - comp); the second grid is not used (see keyword V=)

DVG creates a grid of divergence when the grid is u-comp (grid + 1 = v - comp); units are 10^{-6} sec $^{-1}$; if you specify a second grid, the divergence of that parameter is computed; if the second grid is 0, type **ZERO** for that grid (see keyword V=)

FIL creates a grid with the specifications of the first grid but fills it with the value specified for the second grid, e.g., **MAK 12**

GEO creates u and v component grids of the geostrophic wind; *grid1* must be a height grid

MPY multiplies a grid by another grid or a constant (see the Remarks)

RMS computes RMS and bias differences of two named grids

SPD creates a grid of wind speed; grid input is u-comp (grid + 1 = v - comp); the second grid is not used; it is not linked to u and v grids; it can be used with any two successive grids to reproduce a grid of the square root of the sum of the squares (see keyword V=)

SQR square root; applies to the first grid only

SUB subtracts a grid from another grid or a constant (see the Remarks)

VOR creates a grid of vorticity when the grid is u-comp (grid + 1 = v - comp); units are 10^{-6} sec $^{-1}$; the second grid in the command is not used (see keyword V=)

Keywords

ADD=
- **YES** corrects for meridional flow; only works with the derived options DVG and DST (default)
- **NO** does not correct for meridional flow

DGRID= destination grid number for MAKE parameter (default=next available grid)

GRIDF= grid file number to work on (default is from **IGU SET** *gridf*)

LAB= labels the resulting grid (default depends on operation)

PLANET= planet name (default=earth)

SMO=
- **YES** smooths the resulting grid; only works with derived options ABV, DVG, VOR, ADB, DST, DSH (default)
- **NO** does not smooth the resulting grid

V= number of the v grid to input if it does not follow the u grid (default=u grid + 1)

Remarks

To apply a constant to an arithmetic function (ADD, DIV, MPY, SUB), enter a negative number for the second named *grid*. The absolute value of this number is used as a constant.

The output of command **IGG LIST** contains the following information.

Column	Format
1	grid number
2	year, Julian day
3	hours, minutes, seconds of the grid
4	name of the gridded parameter
5	description of the atmospheric level and units
6	name of the program that generates the grid
7	hours that the forecast grid is valid after generation
8	number of rows in the grid
9	number of columns in the grid
10	latitude and longitude of the upper-left corner; it will be PS if polar stereographic
11	row grid spacing in degrees
12	column grid spacing in degrees

See Also

See commands IGTV and MDX to plot and contour grid point values.

Examples

IGG GET 10 5 7 20 1
This entry moves grids 5, 6 & 7 from grid file 10 into grid file 20, starting at grid 1.

IGG LIST 1 20
This entry lists all grids from 1 to 20 from the default grid file.

IGG MAKE 2 SUB 1
This entry creates a new grid by subtracting grid 1 from grid 2.

IGG MAKE 2 MPY -4 ADD 5 DIV -60
This entry creates a new grid by multiplying each grid point in grid 2 by the constant 4, adding them to grid 5 and dividing by the constant 60.

IGTV

Generates contours and streamlines from grids.

Format

IGTV *grid interval map output [keywords]*

Default

IGTV *grid*
This entry contours *grid* and displays it with a contour interval of 2.

Parameters

grid number of the grid to contour; if this grid is a u component, streamlines are drawn (see keyword V=)

interval contour interval; use integer values 1 through 10 or a multiple of 10 (default=2)
or enter a string name that contains up to 64 values

map

DEF	defines your own boundaries; use the LAT and LON keywords
MID	Midwest USA map
NA	North American map
NONE	does not draw a map
SAT	satellite projection
USA	USA map

Post Office Abbreviation
(default is the grid domain)

output if DEV=C or P, use 1 to display contours, 2 to display the grid and contours, 3 to display grid points on the text window or printer

Keywords

CMAP= graphics color level for the map (default=1)

COLOR= graphics color level for contours; use positive numbers for solid lines and negative numbers for dashed lines; no map is drawn with negative numbers (default=2)

DASH=

NEG	dash negative contours only
POS	dash positive contours only
ALL	dash all contours

ELE= *min max* graphics TV element bounds

GRA= graphics frame to display the plot (default=current)

GRIDF= grid file number (default=current)

IMA= image frame number (default=current)

LAT= *min max* minimum and maximum latitude extents

LIN= *min max* graphics TV line bounds

LINT= contour label interval (default=1)

LON= *min max* minimum and maximum longitude extents

LSIZE= height of the contour labels in pixels (default=7)

MAG= magnifies the data by an order of magnitude (default=0)

PAN= graphics frame panel number; the range is 1-4

PRO= **CONF** conformal projection
MERC Mercator projection
(default is the grid projection)

SCALE= map scale for a CONF projection; values up to 1,000 are multiplied by 1,000,000 (default=no scale)

SF= **YES** displays the frame after contouring
NO does not display the frame (default)

SLAT= *lat1 lat2* standard latitude; for polar stereographic specify *lat1*; for Lambert conformal specify *lat1 lat2* (default=60)

SLON= *lon* normal longitude; for polar stereographic and Lambert conformal, e.g., PRO=CONF (default=center longitude of the map limits)

TEXT= **YES** plots the grid text label (default)
NO does not plot the grid text label

UNIT= contour units; depends on the contoured parameters

V= grid number of the v-grid component if the v-grid doesn't follow the u-grid (default=u-grid + 1)

Remarks

IGTV does not generate gridded data. Use commands MDX, SC, UC, etc., to generate the grids. Use commands IGG and IGU to manipulate grids and grid files.

IGTV allows for map scales (SCALE=) up to 10^8. Entered values should be integers less than 1000. The scale value is the integer multiplied by 1,000,000. For example, SCALE=33 gives a 33,000,000:1 scale.

To contour the wind's u-grid component, assign the v-grid component (keyword V=) a nonexistent grid value such as V=0. This prevents streamlines from being drawn.

Examples

IGTV 5 X X 3 DEV=P
This entry prints the grid points from grid 5.

IGTV 2 X MID 2 DEV=C
This entry displays the grid points and contours from grid 2 over the Midwest.

IGTV 3 10 USA DASH=NEG GRIDF=14
This entry displays the contours from grid 3 in grid file 14 on a USA Mercator projection. It uses a contour interval of 10 with dashed negative values.

IGTV 23 4 USA MAG=2
This entry displays the contours from grid 23 on a USA map using a contour interval of 4. In this example, grid 23 is a precipitation grid with values in one-hundredths of an inch. The MAG=2 allows IGTV to contour the actual values to one-hundredth of an inch by magnifying the data by 10**2. Therefore, a data value of 0.04 inches is contoured on the screen as a 4; a data value of 0.08 inches is contoured as an 8, etc.

IGTV 17 4 USA PRO=CONF SLAT=25 50 SCALE=10
This entry displays the contours from grid 17 with a contour interval of 4. The map is a Lambert conformal projection of the USA with standard latitudes of 25° N and 50° N. The map is scaled 10,000,000 to 1.

Create the following string called LEV:
TE LEV "30 50 60 65 80
Then use IGTV to contour the grid:
IGTV 1 LEV MID UNIT=F
This entry contours only the 30, 50, 60, 65 and 80 degree isotherms. Note that in this special feature of IGTV, there is no pound sign before the string name, i.e., #LEV.

IGU

Grid file utility.

Formats

IGU LIST *bgridf egridf [keywords]*
IGU DEL *bgridf egridf*
IGU SET *gridf*
IGU COPY *sgridf dgridf* **RENUMBER**
IGU MAKE *gridf maxgrd "text*
IGU DIR *gridf date project "text*

Default

No default; you must specify a group of parameters.

Parameters

LIST	lists a directory on a text window
DEL	deletes a grid file
SET	sets the current grid file number
COPY	copies a grid file
MAKE	generates a grid file
DIR	modifies a directory for a grid file
RENUMBER	renumbers grids after copying a file
bgridf	beginning grid file number
egridf	ending grid file number
gridf	grid file number
sgridf	source grid file number
dgridf	destination grid file number
maxgrd	maximum number of grids in the grid file
date	date the grid file was generated (default=current)
project	your project number (default=current)
"text	identification text for your grid file; double quote is mandatory

Keywords

DAY= lists the grid files with this date or range of dates, YYDDD

PROJ= lists the grid files with this project number or range of project numbers

Remarks

There is no definitive limit to the number of grids that can be stored in a grid file. It is determined by the amount of disk space you have. The recommended limit is 1000.

Examples

IGU LIST 1000 1020 DAY=79100
This entry lists the grid files from 1000 to 1020 for day 100 in 1979.

IGU COPY 1000 2000 RENUMBER
This entry copies grid file 1000 into grid file 2000 renumbering the grids to compact the file.

IGU SET 2000
This entry points at grid file 2000. All subsequent grid operations are performed on file 2000 until you execute another **IGU SET** command.

IMGPRO

Generates satellite image products.

Format

IMGPRO *sarea darea [keywords] "text*

Default

IMGPRO *sarea darea* **SCALE=***prodlo prodhi*
This entry processes brightness temperatures from the lowest numbered band in *sarea* with a scaling factor of 10, and attaches a new calibration codicil to *darea*, linearly stretching the specified range between 0 and 255. It copies the destination area navigation from the source area navigation codicil, and rewrites the source area data with a new calibration codicil into the destination area.

Parameters

sarea	source area number; keyword AREA overrides this entry (no default)
darea	destination area number (no default)
"*text*	text to attach to the destination area directory; 32 characters maximum

Keywords

AREA=	single or multiple source area numbers (default=*sarea*)	
BAND=	single or multiple band numbers (default=lowest band number)	
COEF=	coefficients for each term in the equation (default=+1.0)	
CONST=	constant for the equation (default=0.0)	
FACTOR=	internal source and destination integer scaling factors (default=1.0 unless UNIT=TEMP, then default=10.0)	
FORM=	**ADD**	adds each term in the equation (default)
	MULT	multiplies each term in the equation
FUNC=	allows a transcendental function operation on the output of the additive or multiplicative equation, i.e., LOG, ALOG, LN, EXP (default=NONE)	
LLMT=	lower limit thresholds, inclusive, for each term in the equation (no default)	

NAME= derived imagery product name; up to 4 characters (default=PROD)

OFF= offsets for each term in the equation (default=0.0)

POW= powers for each term in the equation (default=+1.0)

QA=
- **YES** quits the output area if it already exists
- **NO** does not quit the output area (default)

SCALE= *prodlo prodhi britlo brithi*
minimum and maximum product and brightness values for the calibration (default=none for the product values; 0 255 for the brightness counts)

SIGN=
- **P** plus the band values relative to their offsets for each term in the equation (default)
- **M** minus the band values relative to their offsets

ULMT= upper limit thresholds, inclusive, for each term in the equation (no default)

UNIT= calibration types for the equation terms (default=BRIT)

ZERO=
- **DATA** assigns zero pixel values as data and includes them in the analysis
- **MISS** assigns zero pixel values as missing and excludes them from the analysis (default)

a nonzero numeric value identifies that pixel value to represent the missing value flag

Remarks

IMGPRO produces simple and complex derived satellite imagery. Each term in the equation can be defined independently. Although the defaults allow for a minimum number of simple mathematical manipulations such as band differencing, averaging or ratioing, the equation specification can be as complicated as you like.

The equation formats are:

```
Output = Constant + FORMat [ Coef * (Off+Sign*Band) * * Pow ]
Output = FUNCtion [ Output ]
```

Some keyword defaults are context sensitive. If more than one band or input area is processed, the default for the equation keywords is the first value specified for the keyword; see the examples.

When using IMGPRO on POES temperature data, specify FACTOR=1 for each input area; the scaling for POES temperature data is 1.

The derived imagery product is always written into band 1 in the output area.

By creating a new calibration codicil with its own name (calibration type), you can display the derived imagery product in its appropriate and physically meaningful units. That is, when you access the area information with the D key, the true values are listed under a column heading with the product name. You can use this product name as a parameter in the **OD L** command to list the derived values contained within the cursor. Use the product name just like any other standard calibration types such as BRIT, TEMP, RAW or RAD.

You can list bands in any order, but the order must be maintained consistently for all keywords.

IMGPRO has no line limit, but has a 4000 element maximum.

You can specify a maximum of 12 terms for an equation.

All areas have the same size, central location and resolution. If this is not the case, use the REMAP, AAMAP or AA command.

Zero pixel values can be treated as missing value codes or real data values. Nonzero numeric values can be substituted to specify a different missing value code other than zero.

Examples

IMGPRO 2048 2049 BAND=8 10 COEF=+1 -1 SCALE=-10 +10 NAME=DIFF UNIT=TEMP

This entry calculates the difference between 11 and 6.7 micron GOES brightness temperatures from the multibanded area 2048, storing the temperature difference in area 2049 with a linear stretch between 0 and 255 brightness counts for the temperature range -10° to +10° K, and naming it DIFF.

IMGPRO 2048 2070 FORM=M BAND=7 8 POW=1 -1 NAME=RATI SCALE=0.5 1.5 UNIT=BRIT FACTOR=X X 100

This entry calculates the ratio of band 7 brightness counts to band 8 brightness counts from area 2048 and writes it to area 2070 scaled up by a factor of 100. That is, the brightness ratios are saved to the hundredths decimal place. This entry is calibrated for a range of 0.5 to 1.5 to linearly stretch between 0 and 255.

IMGPRO 2048 2070 BAND=7 8 NAME=DIFF SIGN=X M SCALE=-10 10 UNIT=TEMP TEMP FACTOR=10 10 10 LLMT=230 ULMT=270

This entry calculates the difference between band 7 and band 8 brightness temperatures warmer than 230° and cooler than 270° from area 2048 and writes it to area 2070 scaled up by a factor of 10. That is, the temperature differences are saved to the nearest tenth of a degree. This entry is calibrated for a range of -10° to +10° to linearly stretch between 0 and 255. The calibration is named DIFF.

ISENT

Calculates theta surface levels for upper air data.

Format

ISENT *sfile dfile day time btha etha inctha [keyword]*

Default

ISENT *sfile dfile*
This entry calculates the theta surface levels for all data in *sfile* and stores the results in *dfile*.

Parameters

sfile	source MD file (default=current mandatory RAOB or IRAB file)
dfile	destination MD file; must not exist before running ISENT (no default)
day	year and day of the upper air data, YYDDD (default=current)
time	time of the upper air observation, HHMM (default=0Z if the current time is less than 13:30Z, else 12Z)
btha	beginning theta value (default=280 K)
etha	ending theta value (default=350 K)
inctha	increment of the theta value (default=10 K)

Keyword

SIG=	history MD file for significant data

Remarks

The ISEN schema must be registered on your workstation before you can use this command. See commands LSCHE and SCHE.

A maximum of 18 theta levels can be calculated. Theta levels contain pressure, mixing ratio, u and v components, delta pressure, Montgomery streamfunction and the theta value.

When using history data, the significant data file should follow the mandatory data file or be specified by keyword SIG.

To view data from the created MD file, use command MDX with a sort condition like the following: **SORT=TIME 12 THA 300**. This sort condition is for data at 12Z; the isentropic surface is 300K. See command MDX for more information.

Example

ISENT X 1000 X 0 290 340
This entry calculates the theta surface levels between 290 and 340 for 0Z on the current day, and files this information into MD file 1000.

K

Toggles images on and off.

Remarks

To toggle the image portion of the frames on/off,

Press: **Alt K**

or

Type: **K**
Press: **Enter**

Each frame on an X-Windows display has both an image portion and graphics portion. This command allows you to toggle the image portion of the frame on and off to provide a better view of the graphics.

KILL

Terminates a command.

Format

KILL *number*

Default

No default; you must specify the Process IDentification (PID) number.

Parameter

number PID number of the command to terminate

Remarks

If you don't know the PID number, use the question mark (?) command to list it.

See Also

See the slash (/) command. It performs the same function as KILL.

Example

KILL 27347
This entry terminates the command running under PID number 27347.

L

Toggles frame looping on and off.

Remarks

To start automatic frame looping,

Press: **Alt L**

or

Type: **L**
Press: **Enter**

Pressing L a second time stops the looping at the first frame of the loop.

See Also

Refer to the Introduction section of this manual for more information about the McIDAS-X Loop Control System.

LA

Lists the digital area directory.

Format

LA *barea earea [keywords]*

Default

LA *barea earea*
This entry lists a single line directory for all areas between the beginning and ending areas.

Parameters

barea beginning area directory to list

earea ending area directory to list (default=*barea*)

Keywords

DAY= lists the area for the current day and year only, YYDDD or YY/MM/DD; if DDD=0, all days for YY are listed

FORM=
- **ALL** lists the entire area directory
- **AUDIT** lists the entire directory with its audit trail
- **EXP** lists an expanded version of the area directory

SS= *ss1 ss2* lists the areas with this sensor source or range of sensor sources

TIME= lists the areas with this time only, HH:MM:SS

Remarks

If you use FORM=ALL with POES, be sure to check the MEMO line in the directory information. The signal will be HRPT (LAC or GAC). The product will be MULT (multiple) or SIG (single) band. The ground station will be Wallops Island (W) or Gilmore Creek (G). The A or D in the line represents Ascending or Descending pass. If D appears on the line, the image is upside down.

Examples

LA 101 120 TIME=21:01
This entry lists the areas between 101 and 120 with time 2101 GMT.

LA 101
This entry lists area 101 only.

LB

Sets image or graphics frame loop bounds.

Format

LB *bframe eframe*

Default

LB
This entry lists the current loop bounds.

Parameters

bframe beginning frame of the loop (no default)

eframe ending frame of the loop; this number must be larger than *bframe* (default=half the highest frame number)
MAX is the highest frame number

Remarks

When you log on to McIDAS, image frame loop bounds are set at a lower bound of 1, with the upper bound being the highest frame number on your workstation. Use the F and L keys to manipulate the loop control system. F lists the loop bound status; L loops the frames.

See Also

See command LS for information about random frame looping. Refer to the Introduction section of this manual for more information about the McIDAS-X Loop Control System.

Examples

LB 1 6
This entry sets images to loop from frames 1 through 6.

LB 6 MAX
This entry sets the image frame loop bounds beginning on frame 6 and ending on the highest frame number.

LF

Lists the frame directory.

Format

LF *bframe eframe [keyword]*

Default

LF
This entry lists the current image frame directory.

Parameters

bframe beginning image frame number to list (default=current)
ALL lists all the image frames

eframe ending image frame number to list (default=*bframe*)

Keyword

FORM= **ALL** lists an expanded directory
STN lists the standard directory (default)

Examples

LF 2 6
This entry lists the image frame directory for frames 2 through 6.

LF 5 FORM=ALL
This entry lists an expanded image frame directory for frame 5.

LOGOFF

Logs you off the system and workstation.

Remarks

This command logs you off the host and workstation, but the McIDAS-X session remains active.

See Also

The EXIT command shuts down a McIDAS-X session and associated windows.

LOGON

Logs you on to the system.

Formats

LOGON *initials project* . **WS**
LOGON *initials project* **I WS**
LOGON *initials project string* **WS**
LOGON *initials project string password*
LOGON *initials project* **I** *password*
LOGON *initials project* . *password*

Default

LOGON *initials project*
This entry logs you on to the workstation and mainframe, leaving the rest of the workstation in its current state. This only works on McIDAS-MVS systems that do not require a password.

Parameters

initials your initials

project your 4-digit project number

string name of the local and/or host string table and string to execute; local strings are executed before host strings

password password if required by your site; each character is suppressed with a dash (- - -) as you type it; only used on McIDAS-MVS systems

. a period initializes the workstation; the string table named *initials* on the workstation and/or the host becomes your current string table; any string in that table beginning with *initials* is executed

I initializes the workstation

WS logs on to the workstation only when specified; WS is suppressed with two dashes (- -) as it is typed

Remarks

LOGON may attempt to establish a TCP/IP connection with a host. If a host connection is requested and established, the workstation's LOGON command is repeated on the host and brings with it information about the workstation's configuration.

When a LOGON to McIDAS-X is successful, this message is displayed.

```
LOGON to McIDAS-X completed.
```

When you log on to McIDAS-MVS, the following information is listed.

- a communications connection message
- your workstation identification
- message of the day from McIDAS-MVS operations
- the + LOGON COMPLETE + message
- a MAIL WAITING message (when applicable)

If your host connection fails or a communications error message appears on the screen, your workstation communication to the mainframe may be down. Contact your computer operator for assistance. To view the McIDAS-MVS logon message during a workstation session,

Type: **. SEE LOGON**

McIDAS-X and -MVS have several logon procedures. Review the examples below and select one that is suitable for you.

Examples

LOGON ABC 1234 I WS
This entry initializes the McIDAS-X workstation as follows:

- clears the string table
- sets the MD file number to 0
- sets image frame loop bounds from 1 to 1/2 the highest frame number
- sets dwell rates to 9/15 second for the first frame and 6/15 second for the remaining frames
- sets the graphics line width to one pixel
- initializes graphics color levels
- displays a red 31 x 31 pixel crosshair cursor
- sets the enhancement table with command:
  EU MAKE 0 255 0 255 0 255 0 255

LOGON ABC 1234 X WS
This entry leaves your McIDAS-X workstation in its present state, except it resets the graphics line width and dash length values via command GD.

LOGON ABC 1234 . CBA@ABC
This entry initializes the McIDAS-X and -MVS parameters. Host and/or workstation string tables ABC are loaded. Every string beginning with ABC is executed. The workstation's strings are executed before the host's.

LOGON ABC 1234 STR ?CYCLONE
This entry initializes the McIDAS-X and -MVS workstation parameters. The string table named STR is loaded on the workstation and/or host. Any strings beginning with STR (e.g., STRCOLOR, STRERASE) are executed. The workstation's strings are executed before the host's.

LOGON ABC 1234 X PA$$WORD
This entry logs on to the workstation and the host. No initialization is done aside from command GD. Because passwords are suppressed with dashes on the screen as you type them, the example line will look like this:

```
LOGON ABC 1234 X --------
```

See Also

Use the McIDAS-MVS command PASS to set or change your password.

LS

Creates random loop sequences for image/graphics frames.

Formats

LS *frame1 frame2 frame3 ... framen [keywords]*
LS O *frame1 frame2 frame3 ... framen [keywords]*

Default

LS
This entry lists the current loop sequences.

Parameters

frame1 . . . n	frame numbers to include in the loop
O	sets the opposite frame loop sequence

Keyword

UPDATE=	**Y**	automatically updates the loop when a new frame is displayed using command DF
	N	doesn't update the loop (default)

Remarks

Use *frame-frame* for a sequential range of frames (see the examples).

To override the opposite frame loop default, use command **LS O**.

See the Introduction section of this manual for more information about the McIDAS-X Loop Control System.

When you set the frame loop, the opposite frame loop is automatically set in the following manner. If frame N is less than or equal to (max frames)/2, it corresponds to the opposite frame N+(max frames)/2. If frame N is greater than (max frames)/2, it corresponds to the opposite frame N-(max frame)/2.

Examples

LS 1 4 2 5
This entry loops frames in the order 1, 4, 2, 5.

LS 1-16
This entry loops frames 1 through 16.

LS 1 16
This entry loops frames 1 and 16 only.

LS O 1-4 8 9 3-1
This entry loops opposite frames 1, 2, 3, 4, 8, 9, 3, 2, 1.

LSCHE

Lists an MD file schema.

Formats

LSCHE *schema version* **HED**
LSCHE FIND *key*

Default

No default; you must specify the parameters.

Parameters

schema name of an MD file schema to list; the name is system dependent (no default)
ALL lists all file schemas

version schema version number to list
ALL lists all schema version numbers (default=latest version)

key name of a schema key; a schema entry point descriptor

HED lists the file header only (default=lists header and keys)

FIND lists the schemas that contain the specified *key*

Remarks

Use command SCHE to register new MD file schemas.

Examples

LSCHE IRAB
This entry lists the IRAB file schema.

LSCHE ISFC ALL
This entry lists all versions of the ISFC file schema.

LSCHE ISHP X HED
This entry lists the file header only for the ISHP file schema.

LSCHE FIND IDN
This entry lists all schemas that contain the key IDN (station ID number).

LVF

Lists virtual frame files.

Format

LVF *string*

Default

LVF
This entry lists all workstation virtual frame files in the mcidas/data directory with the extension .PIX.

Parameter

string lists only the virtual frame files beginning with this character string (default=lists all files)

See Also

Use command SVF to save frames to a virtual frame file. Use command RVF to restore virtual frames.

Example

LVF RAD
This entry lists the virtual frame files that begin with RAD.

LWCON

Converts a McIDAS-OS2 LW file to a McIDAS-X LW file.

Format

LWCON *sfile dfile*

Default

No default; you must specify the parameters.

Parameters

sfile source LW file in McIDAS-OS2 format

dfile destination LW file name

Remarks

Use LWCON to convert LW files from the OS/2 format to the UNIX format. The file must consist of 4-byte integers and/or character data. This program will fail if the file contains integers that represent valid 4-byte ASCII characters.

Example

Suppose you transfer a file named OUTLUSA from a PS/2 to a UNIX workstation and change the file name to TEMPFILE. To convert this file to a McIDAS-X format, enter this command:

LWCON TEMPFILE OUTLUSA
This entry converts the file TEMPFILE, which is in the McIDAS-OS2 format, to a McIDAS-X format and renames it OUTLUSA (its original name on the PS/2).

LWTODOS

Converts LW format files to text format files.

Format

LWTODOS *sfile dfile* **R**

Default

No default; you must specify the files.

Parameters

sfile	source LW file name
dfile	destination text file name; it must be different than *sfile*
R	replaces the destination file if it already exists

Remarks

The LW file format is an 80-character card image, blank padded as needed, with no carriage returns or linefeeds.

Example

LWTODOS SFCPLT SFCPLT.TXT
This entry converts the LW file named SFCPLT to a text file named SFCPLT.TXT.

LWU

LW file utility.

Formats

LWU COPY *sfile dfile*
LWU DEL *file*
LWU INFO *file*
LWU LIST *file bword eword*
LWU MAKE *file*
LWU POKE *file value word*

Default

No default; you must specify the parameters.

Parameters

COPY	copies a file
DEL	deletes a file
INFO	lists the file and its size in bytes
LIST	lists the words in a file
MAKE	creates a file
POKE	pokes a value into a file
sfile	source file name
dfile	destination file name
file	name of the file
bword	beginning word number to list, the range is 0 to 8,000,000 (default=0)
eword	ending word number to list, the range is 0 to 8,000,000 (default=39)
value	value to poke into the word (default=0)
word	number of the word to change (default=0)

Remarks

LW files reside in the mcidas/data subdirectory.

Use command DMAP or **LWU INFO** to determine the size of the file before transferring it to a diskette.

> **Caution !**
> Misuse of the POKE option can permanently damage the file. Be very careful when using it.

Examples

LWU MAKE CLOUDS
This entry creates an LW file named CLOUDS.

LWU COPY CLOUDS NEWONE
This entry copies LW file CLOUDS into file NEWONE.

LWU DEL CLOUDS
This entry deletes LW file CLOUDS.

LWU INFO NEWONE
This entry lists the size of the LW file NEWONE.

LWU LIST LWTXT 10 20
This entry lists words 10 to 20 of the LW file LWTXT.

LW POKE LWTXT 92067 64
This entry changes the value of word 64 in LW file LWTXT to 92067.

MA

Modifies a digital area.

Format

MA *sarea darea frame option p1 p2 p3 p4 [keywords]*

Default

No default; you must specify a set of parameters.

Parameters

sarea source area number

darea destination area number

frame image frame number for the modified area (default=don't load area)

option

A	automatic enhancement
C	contrast stretching
E	lookup table enhancement
F	data fill
G	gradient
H	high pass filter
L	low pass filter
N	shot noise filter
S	digital stretching
ADD	adds a parameter to the data
BAD	removes buffer flakes and bad lines; places the average in all bad lines
CLN	removes buffer flakes and bad lines; places zeros in the bad lines
FLX	converts the IR counts to flux in W/M*M/2
LIN	converts the square root digitization to a linear scale
SCA	scales the data
TEM	converts the IR counts to Kelvin - 100

p1 - p4 these parameters vary with the selected *option*; see the Remarks below

Keywords

BAND= band number to process for multiband data; defaults to the band in *sarea* for single band data

DBAND= destination band number in *darea* (default=BAND)

N

This option applies a shot noise filter to remove spikes along a data line. The shot noise pixel is replaced by the average value of the pixels, one to the left and two to the right.
p1=shot noise window (default=40 pixels).

S

This option takes an enhancement of the digital area which throws away the lower *p1*% and upper *p2*% of the data and stretches the remaining data to fit between 0 and 255.
p1=lower cutoff percentage; 1 < *p1* < 100 (default=3)
p2=upper cutoff percentage; 1 < *p2* < 100 (default=3)

SCA

This option scales the data by multiplying by *p1*. The J(I) * *p1* overflow is set to 255. *p1*=multiplying factor; it can be an integer or real number (default=1).

TEM

This option converts the infrared counts into an image of temperature - 100 (in Kelvin - 100). *p1* and *p2* are not used.

Examples

MA 6512 6513 2 CLN
This entry cleans up the data in area 6512, places the new data in area 6513 and displays the new image on frame 2.

MA 6513 6514 10 C 150 200
This entry contrast stretches area 6513 into area 6514 and displays the image on frame 10. It stretches the digital values 150 to 200 between 0 and 255.

MA 1000 2500 X ADD 100
This entry adds the constant 100 to each digital value in area 1000. The destination area is 2500. It does not display the image. Any new values greater than 255 become 255.

MA 8011 8010 BAD BAND=4 DBAND=6
This entry removes bad lines and buffer flakes from area 8011 band 4 and stores the result in area 8010 band 6.

MAKFRM

Allocates new frames to a McIDAS-X session.

Format

MAKFRM *nframes lines elements [keyword]*

Default

MAKFRM
This entry adds one new frame to the end of the current frame list. It is the same size as the currently displayed frame.

Parameters

nframes number of frames to allocate (default=1)

lines number of lines (default=size of the current frame)

elements number of elements (default=size of the current frame)

Keyword

MAXF= limits the number of frames that can be created; used to prevent creating too many frames when defining *nframes* (default=10)

Remarks

Any line or element size can be specified; new frames do not need to be the same size as the current frame.

Loop bounds must be updated to include new frames.

New frames are appended to the end of the current frame list.

You cannot exceed the maximum number of frames defined when the current McIDAS session was started.

Example

MAKFRM 1 400 400
This entry creates a single frame that is 400 lines by 400 elements.

MAP

Outlines map and latitude/longitude lines on a graphics frame.

Format

MAP *map color1* **LALO** *color2 [keywords]*

Default

MAP
This entry draws a map on a satellite image.

Parameters

map	**DEF**	draws a map in Mercator projection with latitude/longitude ranges that you specify; the map file is selected as in SAT below
	EURB	Europe's political boundaries; latitude=20 80, longitude= - 60 30; map file OUTLHPOL
	EURO	Europe; latitude=20 80, longitude=- 60 30; map file OUTLSUPW
	H	North America; medium resolution; map file OUTLUSAM
	L	world coastal outlines; used with satellite projection; map file OUTLSUPW
	LALO	no map; latitude/longitude lines only
	MID	Midwest; latitude=34 50, longitude=83 104; map file OUTLUSAM
	NA	North America; latitude=25 80, longitude=55 179; map file OUTLUSAM
	OUTLHPOL	world political outlines
	OUTLHRES	world coastal outlines; high resolution
	OUTLSUPU	continental USA; high resolution
	OUTLSUPW	world coastal outlines; medium resolution
	OUTLUSAM	North America; medium resolution
	PO Abbreviation	Post Office abbreviation; map file OUTLUSAM
	POLI	world political boundaries; map file OUTLHPOL
	SAT	draws a map in satellite projection using the OUTLUSAM map file for North America and OUTLSUPW for all other areas (default)
	USA	continental USA; latitude=23 56, longitude=66 126; map file OUTLUSAM
	VH	continental USA; high resolution; map file OUTLSUPU

		WORL	world coastal outlines; used with Mercator projection; map file OUTLSUPW
		WIS	Wisconsin; latitude=41 48, longitude=85 95; map file OUTLUSAM
	color1		graphics color level for the map (default=1)
	LALO		draws latitude/longitude lines with a map (default=does not draw lines)
	color2		graphics color level for latitude/longitude lines (default=2)
Keywords	**ACC=**		accuracy for the latitude/longitude lines; the range is 1-10 (default=4)
	BOX=	**YES** *color*	draws a box around a graphics panel in a specified color (default for all except SAT; default color=1)
		NO	does not draw a box (default for SAT projection)
	ELE=	*min max*	TV element extents (default depends on screen size)
	GRA=		graphics frame number (default=current)
	IMA=		image frame number (default=current)
	INT=	*lat lon*	intervals for latitude/longitude lines (default=computed)
	LABEL=	**NO**	does not add a label
		YES *clat clon*	adds latitude/longitude line labels (default) specify the color levels for latitude and longitude (default for both is level 3); see the Labels information; use this keyword when LALO is specified
	LAT=	*lat1 lat2*	latitudes of the points at the lower-right and upper-left corners of the TV screen
	LIN=	*min max*	TV line extents (default depends on screen size)

LON= *lon1 lon2* longitudes of the points at the lower-right and upper-left corners of the TV screen; if you choose a CONF projection and specify SCALE, the map is centered at the specified coordinates if only *lat1* and *lon1* are entered; otherwise, the point with coordinate *lat2, lon2* is placed in the upper-left corner of the screen; the other point is shifted on the screen or removed from it to create a map with a given scale; defaults for SAT projections are the range taken from the image/map limits; for CONF and MERC projections, defaults are latitude -90 to +90, longitude -180 to +180

NAME= map file name; it overrides the default map file

PAN= panel number; the range is 0-4 (default=0, whole screen)

PRO=
- **CONF** conformal projection; see the Projections below
- **MERC** Mercator projection (default for all maps except H, VH, L or LALO)
- **SAT** satellite projection (default if map and projection are not specified, or map is H, VH, L or LALO and the projection is not specified)

SCALE= map scale for a CONF projection; scale values in the range up to 1000 are multiplied by 1,000,000 (default=no scale)

SLAT= standard latitude(s) for a CONF projection only; one value for a polar stereographic projection (default=60°)
two values for a general Lambert conformal projection

SLON= standard longitude for a CONF projection only (default is computed)

Remarks

To plot a map on a satellite image, use L, H, VH or SAT (or X, since SAT is the default) as the map parameter.

Projections

The MERC (pseudo-Mercator) projection has equidistant latitude lines. Otherwise it is the same as a true Mercator projection. The CONF (Lambert conformal) projection includes polar stereographic projection as a special case. If you enter only one positive SLAT value or if you accept the default of 60°, the projection is polar stereographic with the North Pole as the origin of projection. If you enter only one negative value for SLAT, the origin of the polar stereographic projection is the South Pole. You must enter two SLAT values to obtain a general Lambert conformal projection.
If SLAT1 + SLAT2 > 0, the North Pole is the origin of projection.
If SLAT1 + SLAT2 < 0, the South Pole is the origin of projection.

For some values of keywords LAT, LON, SLON and SLAT, the area defined cannot be found. If this happens, an error message is displayed and the program aborts. Use SLON for CONF projections only. The default value is computed by assuming that the standard meridian is located in the middle of a box set by two points and is parallel to the left and right edges of the TV screen. If a map is centered, the default SLON is equal to LON.

Labels

In some cases, labels overlap. You can usually fix this by changing the latitude/longitude line intervals and/or the accuracy.

Examples

The examples below are divided into four groups that include satellite projection, Mercator projection, polar stereographic and general Lambert conformal projection. Command lines that won't fit on one line have a second line that is indented.

Satellite Projection

MAP X 5 LALO 6 INT=5 10
This entry draws a map on a satellite image in graphics color level 5. It draws latitude/ longitude lines in graphics color level 6 and labels them. The interval for latitude lines is 5°. The interval for longitude lines is 10°.

MAP VH X LALO LABEL=NO
This entry draws a high resolution USA map and latitude/longitude lines without labels.

Mercator Projection

MAP AK X LALO
This entry draws a map of Alaska and latitude/longitude lines with labels.

MAP EURO 2; MAP EURB X LALO
This entry draws a map of Europe with coastal/political boundaries.

Polar Stereographic

MAP WI PRO=CONF
This entry draws a map of Wisconsin in conformal projection.

MAP LALO PRO=CONF LAT=0 70 LON=90 -90
This entry draws latitude/longitude lines and labels for the specified North American region.

MAP OUTLSUPU X LALO PRO=CONF LAT=30 45
LON=90 110 SLON=100
This entry draws a map and latitude/longitude lines for a region with the specified latitude/longitude range and standard longitude. The map is taken from the OUTLSUPU high resolution map file. In this case, the map file name can be abbreviated as VH.

MAP X X LALO PRO=CONF LAT=-20 -20 LON=0 180
This entry draws a map of the northern hemisphere with the North Pole as the origin of projection.

MAP X X LALO PRO=CONF LAT=20 20 LON=0 180 SLAT=-60
This entry draws a map of the southern hemisphere with the South Pole as the origin of projection.

MAP X X LALO PRO=CONF LAT=-10 60 LON=-10 20 SCALE=20
This entry draws a map of the latitude/longitude range specified in 1:20000000 scale. The point with latitude 60 and longitude 20 is located in the upper-left corner of the TV screen.

MAP PRO=CONF LAT=-90 LON=0 SLAT=-60 SCALE=35
This entry draws a map centered at the South Pole, with the origin of the projection at the South Pole and a standard latitude of 60°. The point with latitude -90 and longitude 0 is in the middle of the TV screen. The standard longitude is 0° and the scale is 1:35000000.

MAP X X LALO PRO=CONF LAT=-5 -35 LON=-115 -170 SLAT=-60
This entry draws a map of Australia with latitude/longitude lines and labels in the projection centered at the South Pole.

MAP X X LALO PRO=CONF LAT=-60 0 LON=-70 -145 SLAT=-60 SLON=140
This entry produces the same map of Australia but rotates it by 90°, with the South Pole at the right of the screen.

Lambert Conformal

MAP PRO=CONF LAT=20 60 LON=70 165 SLAT=40 60
This entry draws a Lambert conformal map of the United States.

MAP X X LALO PRO=CONF LAT=40 70 LON=150 -150 SLAT=40 60
This entry draws a map of the Alaska region. In the Lambert conformal projection, the map splits but the information is complete.

MAP X X LALO PRO=CONF LAT=-15 LON=-135 SLON=180 SCALE=25 SLAT=-60 -40
This entry draws a map of Australia with latitude/longitude lines.

MAP X X LALO PRO=CONF LAT=-80 LON=15 SLON=10 SLAT=-70 -10 SCALE=40
This entry draws a map of Antarctica.

MC

Combines two areas to produce a new output area.

Format

MC *sarea1 sarea2 darea option p1 p2 p3 p4 p5 [keywords]*

Default

No default; you must specify a group of parameters.

Parameters

sarea1, 2 source area numbers to combine

darea destination area number to store the combined results

option

AVE	averages the brightness values
CLD	clouds
COR	cloud cores
DIS	discriminate
DIV	divides *sarea1* by *sarea2*
MAX	saves the maximum brightness values
MIN	saves the minimum brightness values
MPY	multiplies *sarea1* by *sarea2*
RAT	ratio
RMS	root mean square
SPL	generates a split screen image
SUB	subtracts *sarea2* from *sarea1*
WAV	weighted average of two areas

p1 - p5 these parameters vary with the selected *option*; see the Remarks below

Keywords

BAND= *band1 band2* band numbers corresponding to the area numbers

IMA= image frame number; displays *darea*

Remarks

Command MC does a pixel-by-pixel combination of two areas to produce a new output area. The output area is given an area directory equal to the directory for the first input area, plus the appropriate message code. All areas must be the same size, centered at the same location, and have the same resolution. The functions presently available are described below.

sarea1 and *sarea2* are the entire source areas. *s1* and *s2* are individual pixels from *sarea1* and *sarea2*, respectively. *s* is a pixel from either *sarea1* or sarea2. *d1* is the pixel value of the destination area.

AVE

Averages 2 areas.
Function: $d1 = \frac{s1 + s2}{2}$

p1 and *p2* are threshold limits. A pixel is included in the average if $p1 < s < p2$. (default=0 for *p1*; 255 for *p2*)

CLD

Creates an area of only clouds (using the minimum brightness composite from the **MIN** option) in *sarea2* as background brightness. *p1* defines the brightness threshold.
Function: $d1=s1$ (if $s1 > s2 + p1$). Otherwise, $d1=p2$.
(default=0 for both *p1* and *p2*)

COR

Selects cloud cores by comparing the brightness values defined by *p1* and *p2* and placing the results in *darea*.
Function: If brightness $s1 > p1$ and brightness $s2 < p2$, then $d1=p3$. Otherwise, $d1=p4$.

DIS

Discriminates the values of one area against the values in a second area.
Function: $d1=s1$ if $p1 < s1 < p2$ and $p3 < s2 < p4$. Otherwise, $d1=p5$.
(default=0 for *p5*)

DIV

Normalizes the area ratio of two areas and, if desired, changes the brightness value. *p2* cannot equal zero.
Function: $d1=100 * (s1/s2) * p1/100+p2$
p1=normalization factor; *p2*=factor to increase or decrease the baseline brightness

MAX

Selects the maximum brightness value from 2 areas.
Function: *d1*=**MIN** (**MAX** (*s1, s2*), *p1*). (default=255 for *p1*)

MIN

Selects the minimum brightness value from 2 areas.
Function: *d1*=**MAX** (**MIN** (*s1, s2*), *p1*). (default=0 for *p1*)

MPY

Multiplies two areas together.
Function: $d1=\frac{(s1 * s2) + p1}{(\ 256\ )}$
(default=0 for *p1*)

RAT

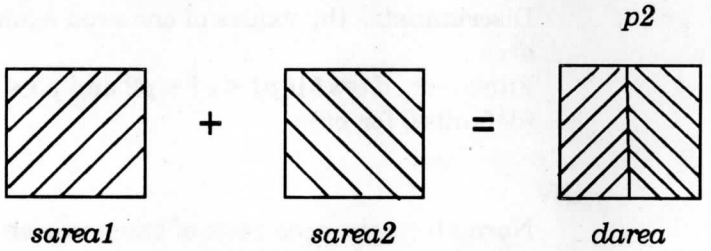
Creates the color ratios of two areas.
Function: $d1=\frac{(p1*s1 - p2*s2) * p3 + p4}{s1 \text{ and } s2}$
(default=100 for *p1*, *p2* and *p3*; 0 for *p4*)

RMS

Provides the root mean square of two areas.
Function: $d1=\frac{(s1^2 + s2^2 = \ldots)\ 1/2}{(number\ of\ areas)}$
p1 and *p2* are threshold limits. A pixel is included in the average if $p1 < s_i < p2$. (default=0 for *p1*; 255 for *p2*)

SPL

Combines two areas to create a split image. For two vertically split images, enter: **MC** *sarea1 sarea2 darea* **SPL** *p1 p2*
where *sarea1* and *sarea2* are the area numbers to combine, *darea* is the destination area of the split image, *p1* is the integer whose value exceeds the number of lines in *sarea1* and *sarea2*, and *p2* is the TV element where the split occurs.



The left sides of *sarea1* and *sarea2* comprise the final image. You may need to do several AA commands to obtain the desired result. For two horizontally split images, *p1* defines the line number where the split occurs; *p2* must be larger than either area's line number.

SUB

Subtracts two areas. You may change the base level and range.
Function: $d1= p1 * (s1 - s2 + p2)$. (default=1 for *p1*; 0 for *p2*)

WAV

WAV is the weighted average of two areas. *p1* must be >0.

Function:

$$d1 = \frac{\sum_{s1=1}^{N} s1 * p1}{\sum_{s1=1}^{N} p1}$$

N=2

(default=1 for *p1*)

Examples

MC 9 10 16 AVE IMA=5

This entry averages areas 9 and 10. It places the average in area 16 and displays it on image frame 5.

MC 13 6 2 SUB 10

This entry subtracts area 6 from area 13 and stores the results in area 2. The new image is not displayed. The brightness range is stretched using *p1*=10.

MC 6512 6513 6520 SPL 1000 300 IMA=10

This entry combines areas 6512 and 6513 into a vertically split image. The output area is 6520. The image is displayed on frame 10. Since the source areas are all less than 1000 lines, the image is vertically split on TV pictel 300.

MDE

Edits MD files.

Formats

MDE *file* **KEYS=LIST**
MDE *file* **KEYS=DEL** *conditions*
MDE *file* **KEYS=REST** *conditions*
MDE *file* **KEYS= UNIT= VALU=** *conditions*

Default

No default; you must specify a group of parameters.

Parameter

file MD file number to edit (default is set by **MDU SET** or by the previously executed MDE command)

Keywords

KEYS= keys in the MD file to edit
- **DEL** deletes the records that meet the search conditions
- **LIST** lists the keywords in the MD file schema by row and column headers and data
- **REST** restores a deleted record; specify ROW= and COL=

UNIT= units in which the new key values are entered; specify the units if they're different from those native to the MD file

VALU= new value for the keys
- **MISS** enters missing data values

conditions search conditions to meet when searching for a record to edit; use any or all of the following options:
- **ROW=** *min max* row number or range of numbers (default=1)
- **COL=** *min max* column number or range of numbers (default=1)
- *schema keyword=low high units* range and units of the schema keyword that you're searching for; units are necessary if the range is specified in units other than those native to the MD file

Remarks

Use command MDE to edit or restore MD files. Before editing system MD files, move them into your assigned file numbers with command **MDU COPY**. If you delete a record accidentally, you can recover it with **KEYS=REST** provided you have not repacked the file.

Examples

MDE KEYS=DEL ROW=1 5 COL=15 20
This entry deletes columns 15 to 20 in rows 1 through 5.

MDE 6514 KEYS=LIST
This entry lists the keys for MD file 6514.

MDE KEYS=T TD VALU=MISS ID=MSN TIME=12
This entry flags the temperature (T) and dew point (TD) as missing for Madison, WI, at 12 GMT.

In the following example you will edit a ship observation in MD file 31. Before editing the data, move MD file 31 into your assigned file numbers (file 6512 in this example).

1. **MDU SET 6512**
   This entry sets the MD file pointer to 6512. All subsequent MD file commands will be performed on MD file 6512.

2. **MDE KEYS=T UNIT=C VALU=20 ID=KWPR TIME=12**
   The search conditions are ID=KWPR and TIME=12. MDE will locate ship ID KWPR at 12 GMT and change its temperature to 20° C.

3. **MDE KEYS=DEL ROW=5 COL=10 15**
   This entry deletes the records at row 5 and columns 10 to 15.

4. **MDE KEYS=REST ROW=5 COL=10**
   This entry restores the record at row 5 and column 10.

MDL

Lists the MD file data.

Format

MDL *file* **ALL INI SAVE KEYS= UNIT=** *conditions*

Default

MDL
This entry lists the first record of the current MD file.

Parameters

file MD file number (default is set by **MDU SET** or by the previously executed MDL or MDE command)

ALL lists all occurrences that meet the search conditions (default=first occurrence)

INI initializes the string table entries used by MDL (default=does not initialize)

SAVE saves the MDL keywords in the string table (default=does not save)

Keywords

KEYS= keys to list from the MD file schema
LIST lists the keys in the MD file schema by row and/or column header keys and data keys

UNIT= units in which to list the value of the keys selected with keyword KEYS; specify this keyword if the units are different from those native to the MD file

conditions conditions to meet when searching for a record to list; use any or all of the following options:

ROW= *min max* row number or range of numbers (default=1)

COL= *min max* column number or range of numbers (default=1)

schema keyword=low high units
range and units of the schema keyword that you're searching for; units are necessary if the range is specified in units other than those native to the MD file

Remarks

Position the parameters for keyword UNIT= in the same order as those for keyword KEYS=.

Use the letter X as a place holder to list a key in its default unit.

You can store keys, units and search conditions in a string table; see parameters INI and SAVE. It is not necessary to type them for each MDL command.

Examples

MDL 3 KEYS=ID TIME T TD ID=MSN TIME=12
This entry lists the station ID, time, temperature and dew point for Madison, WI, at 12 GMT from MD file 3.

MDL 33 ALL KEYS=ID T TD TIME LAT LON T=20 21 C UNIT=X C C TIME=12
This entry lists the station ID, temperature, dew point, time, latitude and longitude from all reports in MD file 33 meeting the conditions TIME=12 GMT and the temperature is between 20° and 21° C.

MDL INI SAVE KEYS=Z T TD DIR SPD UNIT=FT F F X KT ROW=1 COL=5
This entry lists the height (FT), temperature (F), dew point (F), wind direction and wind speed (KT) for row 1, column 5.

MDU

MD file utility.

Formats

MDU COPY *sfile dfile*
MDU DEL *bfile efile*
MDU DIR *file id "comments*
MDU LIST *bfile efile [keyword]*
MDU MAKE *file schema version nrows ncols id "comments*
MDU SET *file*

Default

No default; you must specify a group of parameters.

Parameters

COPY	copies the contents of the MD file
DEL	deletes an MD file
DIR	changes a file identification number and comments
LIST	lists the file directory headers
MAKE	makes a new MD file
SET	sets the current MD file number
sfile	source MD file number
dfile	destination MD file number
bfile	beginning MD file number
efile	ending MD file number (default=*bfile*)
file	MD file number
id	identification number, YYDDD; (default=0 if used with the MAKE option; default=current ID if used with the DIR option)
"comments	comments added to the file; double quote is mandatory
schema	MD file schema name, e.g., IRAB, ISFC
version	schema version number; use X for schema defaults

nrows number of rows; use X for schema defaults

ncols number of columns; use X for schema defaults

Keyword

DAY= Julian day to list, YYDDD

Remarks

Before using the **MAKE** option, be sure the schema type is registered on your workstation. See commands LSCHE and SCHE for more information. Also see the *Registering MD File Schemas* section in the Introduction of this manual.

Examples

MDU COPY 1 10
This entry copies MD file 1 into MD file 10.

MDU DEL 2 6
This entry deletes MD files 2 through 6.

MDU DIR 1 91290 "SHIP AND BUOY DATA
This entry changes the directory of MD file 1 so the ID is 91290 and the comment is SHIP AND BUOY DATA.

MDU LIST 1 40
This entry lists the MD file directory headers from MD files 1 to 40.

MDU MAKE 1 ISHP 2 X X 91300 "SHIP DATA
This entry creates MD file 1 of schema ISHP, version 2. It uses row and column defaults and the ID of 91300 labeled SHIP DATA.

MDU SET 5
This entry sets the current MD file number to 5. All subsequent MD file commands are performed on MD file 5.

MDX

Plots or grids data from MD files or grids.

Formats

MDX CLE PREFIX =
MDX LIST PREFIX=
MDX PLT [*keywords*]
MDX PLT *ugrid vgrid* [*keywords*]
MDX *grid* [*keywords*]
MDX *parm* [*keywords*]

Default

MDX
This entry executes the current information in the context table with PREFIX=$.

Parameters

CLE restores strings with the specified prefix to their default values

LIST lists the values of the strings with the specified prefix

PLT plots one or more parameters as defined in the prefixed strings

ugrid grid number containing the u component of the wind

vgrid grid number containing the v component of the wind

grid one or more grid numbers of the parameters to plot or contour

parm one or more MD file keys or derived parameters; see Remarks

Keywords

MDX has many keywords for fetching and displaying data. They are divided into five groups for discussion.

- Parameter keywords control the display characteristics for individual parameters, e.g., color, size, units, scaling.
- Output device keywords control the size of the display and set the output device.
- Grid/contour keywords change the grid size, smoothing and contour interval.
- Map keywords specify maps and projections.
- Miscellaneous keywords perform various functions.

Parameter Keywords

COLOR= graphics color level of the plotted data graphics; use keyword GCOLOR for contours (default=3)

DIVIDE= divides the data values before plotting; to multiply, use a number from 0 to 1 (default=1)

FORMAT= FORTRAN format specification for the output (default=I12; character data default=A4)

LSIZE= label height in pixels; if LSIZE=5, all data is plotted; the numbers can overwrite each other (default=8)

u v if parameter WNV is specified, a negative LSIZE plots vectors of constant length; if parameter WIN is specified, a positive LSIZE defines a relative length of the wind barb; specify *u* and *v* lengths with the same value

MISS= missing data code (default=Z80808080)

OFFSET= operates on data before output (default is DIVIDE=1, OFFSET=0); value = (data - OFFSET)/DIVIDE; the UNIT keyword uses the DIVIDE and OFFSET

PLACE= place to plot the data relative to the station location; the station is located at 41 in a 9 x 9 matrix starting at 1 in the upper-left corner, increasing along a row; use when plotting more than one parameter (default=41)

UNIT= units to plot the parameter (default=the MD file original units); the possible conversions are:
K to C, F
MB to INHG
MPS, MPH, KT (any)
KM, M, CM, MM, MI, NMI, YD, FT, IN (any)
SYMB plots weather symbols (default=CHAR)

Output Keywords

GELE= *beg end* graphics element extents (default=depends on screen size)

GLINE= *beg end* graphics line extents (default=depends on screen size)

GRA= graphics frame number (default=current)

IMA= image frame number (default=current)

OUT=
PLO plot (default)
CON grid and contour

	PANEL=		graphics panel quadrant, the range is 0-4 (default=0, full screen)
	PELE=	*beg end*	CRT/printer element extents (default=1 60 for the CRT; 1 120 for the printer)
	PLIN=	*beg end*	CRT/printer line extents (default=1 19 for the CRT; 1 60 for the printer)
Grid/Contour Keywords	**CINT=**		grid contour interval (default=2)
	DER=	**WNV**	plots wind vectors from the grid file data
	DRAW=	**YES**	draws contours after gridding (default)
		NO	does not draw contours
	GCOLOR=		graphics color level (default=2)
	GRIDF=		destination grid file to store grids (default from **IGU SET**)
	GUESS=		grid to use as first guess (default=none)
	INC=		grid increment in degrees (default=1.0)
	SMOOTH=		smoothing parameter (default=40)
Map Keywords	**LAT=**	*min max*	minimum and maximum latitude extents
	LON=	*min max*	minimum and maximum longitude extents
	MAP=	**NA**	North America
		USA	USA
		MID	Midwest USA
		Post Office Abbreviation	
	MCHAR=		map character for the CRT/printer output (default= . . .)
	MCOLOR=		graphics map color level (default=1)
		0	for no map
	PRO=	**CONF**	conformal projection for polar stereographic or Lambert conformal
		MERC	Mercator projection (default)
		SAT	satellite projection
	SCALE=		map scale ration for PRO=CONF (default=not true to scale)

SLAT= *lat1 lat2* standard latitude(s); for polar stereographic specify *lat1*; for Lambert conformal specify *lat1 lat2* ; used with keyword PRO=CONF (default=60, polar projection)

SLON= specifies the normal longitude for polar stereographic or Lambert conformal; used with keyword PRO=CONF (default centers longitude of the map limits)

Miscellaneous Keywords

DERIVE= use **DERIVE=***temp dewpoint pressure (elevation)* if THAE, THA or MIX is displayed when the parameter does not appear in the MD file (it will be calculated); use *elevation* with sea level pressure; for an SVCA or ISFC file use: **DERIVE=T TD PSL ZS** for a RAOB or IRAB file use: **DERIVE=T TD P**

GRIDF= grid file number to read (default is from **IGU SET**)

MDF= MD file number to read (default is from **MDU SET**); you can combine up to six MD files using PREFIX=

PREFIX= MDX stores options and defaults in the system context file with a prefix at the beginning of the string name; it can be any character except numeric or # (default=$)

If you set up two context files using keyword PREFIX, you can execute these arithmetic operations:

- `-` subtract
- `*` multiply
- `+` add
- `/` divide
- `:` catenate

For all operations, except catenate, the MD file must have the same schema; if LAT/LON is not contained in the column header, only one row can be operated on, for example: **PREFIX=$ - !**

SORT= of the form *keyword 1 loval 1 [hival 1] keyword 2,* etc., selects data from the MD file that meets its conditions; in the SORT= keyword list, do not use an equals sign (=) between keywords and *loval, hival*; *hival* is optional if *loval* is numeric; do not specify *hival* if *loval* is alphabetic; *keyword* is any parameter from an MD file or a ROW and COL number, for example: **SORT=TIME 12 13 ST WI**

SOU=
- **MDF** data source is an MD file (default)
- **GRID** data source is a grid file

Remarks

MDX is a flexible routine that plots or contours from any schema MD file or grid. When plotting or contouring ISFC, SVCA, IRAB or RAOB schema MD file data, it is much easier to use commands SP, SC, UP and UC. When contouring grid data, it's easier to use command IGTV.

MDX is the general MD file plotter/gridder. It is intended for use in macros, not entered directly.

With each MDX command entry, the information (i.e., parm, time, date, map boundaries, display colors) is stored in strings with a special character prefix. The default prefix is a dollar sign ($), but you can define a prefix using the PREFIX= keyword with any single character except a pound sign (#) or alphanumeric character.

The *parm* parameter may be any key name in the MD file (use command MDL to list keys), or one of these derived parameters: ABV, ADV, DVG, MIX, SPD, STR, THA, THAE, VOR, WIN, WNV.

When the plus sign (+) is used as the last positional parameter, the command information is stored in the string table, but is not plotted. This allows execution of arithmetic operations on the data using the PLT option with the PREFIX= keyword.

The most basic command to display data is **MDX** *parameter*, where *parameter* is any parameter found in an MD file. The command plots all of this parameter from the current MD file (from **MDU SET**) on the current graphics frame on a map as determined by the limits of the data. To do anything more with MDX, you must know something about the type of data in the MD file. For example, if you want to plot 500 mb heights for day 91250 at 12Z over the Midwest, you must know that the height, day and time are referenced through parameters Z, DAY and TIME in the MD file.

The parameter PSL is the altimeter setting converted to millibars, while PRE is the sea level pressure in millibars.

The command to enter (with IRAB data in MD file 5000) is:

```
MDX Z MAP=MID MDF=5000 SORT=P 500 DAY 91250
   TIME 12
```

Keyword SORT provides a way of limiting the data to a specific subset of interest. This is probably the most used keyword along with a map specification keyword (MAP= or LAT= LON=). When using history data, the contour plot does not indicate a day unless you indicate that day as a SORT= condition. Do NOT use an equals sign (=) between the keys and values in the SORT= list.

Keywords LAT and LON default to limits which guarantee complete coverage of the data distribution, rounded to the nearest whole degree.

Example

Before using this example, enter **MDX CLE** to clear and initialize the string entries that MDX uses.

1. Plot the weather data from MD file 4000 at 18 GMT.

   MDX WX1 MDF=4000 SORT=TIME 18

2. Contour the temperature advection from MD file 3020 over the Midwest at 15 GMT.

   MDX T ADV MDF=3020 MAP=MID OUT=CON
   SORT=TIME 15

3. Plot T in degrees Fahrenheit for MD file 4050, for Wisconsin.

   MDX T + MDF=4050 UNIT=F MAP=WI

   This command does not plot because the + is inserted as the last positional parameter. Now plot in graphics color level 2 (MDF, UNIT and MAP remain the same).

   MDX T COLOR=2

4. Plot the temperature from the current surface data for 15Z for a lat/lon box. The MD file is the last digit of the Julian day (if zero, MD=10); today is 91322.

   MDX T MDF=2 LAT=30 50 LON=90 105 SORT=TIME 15

   We forgot to specify only the hourlies (no specials) and degrees C. When MDX is done plotting, enter the command below.

   EG; MDX T SORT=TIME 15 TYPE 0 UNIT=C

5. Plot 1000-500 mb thickness over the USA, 12Z, MD file 1030, by entering the following command sequence.

   ```
   MDX CLEAR
   MDX Z + SORT=P 500 TIME 12 MAP=USA MDF=1030
      PREFIX=$
   MDX CLEAR PREFIX=!
   MDX Z + SORT=P 1000 TIME 12 MAP=USA MDF=1030
      PREFIX=!
   MDX PREFIX=$ - !
   ```

6. Take the winds from MD files 2020 and 2045 and grid them for streamlines.

```
MDX STR + MDF=2020 PREFIX=$
MDX STR + MDF=2045 PREFIX=!
MDX PREFIX=$ : !
```

7. Use THAE, THA and MIX. It is easier to use the macros (SP, UP, etc.) to display these derived parameters. When using MDX, an extra keyword, DERIVE, is necessary.

```
MDX MIX MDF=3 MAP=MID DERIVE=T TD PSL ZS
   SORT=TIME 17 DAY 92003 TYPE 0
```

This entry plots a mixing ratio from the surface data for day 92003.

8. Plot the grid points on the graphics for grid 10, grid file 6512, which contains temperature data.

```
MDX 10 SOU=GRID GRIDF=6512 MAP=MID UNIT=C
```

9. Plot the wind flags at the grid points for *u* grid 1 and *v* grid 2 at 12 GMT.

```
MDX PLT 1 2 SOU=GRID PRO=SAT SORT=TIME 12
```

10. Plot parameters T and TD from MD file 4000 at 12Z over Wisconsin. Position the temperature above the dew points with the PLACE keyword. First, set it up with no plot.

```
MDX T TD + MDF=4000 SORT=TIME 12 MAP=WI
   PLACE=41 50
```

Now use plot.

```
MDX PLT
```

11. Plot the *u* and *v* component vectors on the graphics from grids 1 and 2.

```
MDX PLT 1 2 SOU=GRID DER=WNV MAP=MID
```

12. Plot the weather symbols for 18Z on day 91301.

```
MDX WX1 UNIT=SYMB MDF=1 MAP=MID SORT=TIME 18
   TYPE 0 DAY 91301
```

MG

Plots a 24-hour surface meteorogram.

Format

MG *station time day [keywords]*

Default

MG *station*
This entry plots a surface meteorogram using the current day and time. It initializes the color levels and erases the graphics before plotting.

Parameters

station 3- or 4-character station ID

time hour of the last data plotted on the graph; the range is 0-23 (default=current)

day year and day, YYDDD (default=current)

Keywords

GRA= graphics frame number

INIT= **YES** initializes the graphics colors (default)
NO does not initialize the graphics colors

MDF= history MD file number; specify parameter *day* with this keyword (default=real-time MD file)

SF= **YES** displays the graphics frame when completed
NO does not display the graphics frame (default)

Remarks

A meteorogram plots temperature, dew point, altimeter setting, wind speed and direction, weather, and cloud cover for a 24-hour period of the specified station.

Cloud cover symbols include:

- scattered - 1 small cloud
- broken - 2 clouds
- overcast - 1 large cloud
- clear - no clouds

Wind speed and direction indicators are:

- direction - short barb with angle
- speed - length of the barb
- calm - diamond shaped symbol

The altimeter setting is plotted with its range labels, depending on the minimum and maximum altimeter setting for a given day and time period.

Examples

MG MSN
This entry plots data for the past 24 hours for Madison, WI. The day and time default to the current data.

MG MSN X 91331
This entry plots data from 91330 0 GMT to 91331 0 GMT for Madison, WI.

MOVIT

Copies areas and updates an image frame loop.

Formats

MOVIT *bsarea esarea bdarea edarea bframe eframe locate y-coord x-coord mag line ele [keywords]*
MOVIT *bsarea esarea bdarea edarea bframe eframe locate station mag line ele [keywords]*

Default

MOVIT *bsarea esarea bdarea edarea*
This entry searches *bsarea* through *esarea* for the most recent time and copies the most recent image into the area following the latest time in *bdarea* to *edarea*; it does not display the image.

Parameters

bsarea beginning source area number of the data searched

esarea ending source area number of the data searched

bdarea beginning destination area number searched; must be different than *bsarea*

edarea ending destination area number of the data searched

bframe beginning image frame number searched (default=don't update image frame)

eframe ending image frame number searched (default=*bframe*)

locate type of coordinate the area transfers and TV load use as a reference point; use one of these coordinate systems:
A area
E earth
I image
T TV

followed by one of these locations:
C centered
D lower-right corner
U upper-left corner
(default=AU)

y-coord y-axis coordinate (default=upper-left corner)

x-coord x-axis coordinate (default=upper-left corner)

station 3- or 4-character station ID; must be preceded by EU, EC or ED

mag image resolution blowup (positive numbers) or blowdown (negative numbers); blowups repeat data values while blowdowns sample data (default=1)

line line number dimension defining *bdarea* and *edarea* (default=number of lines in the current frame)

ele element number dimension defining *bdarea* and *edarea* (default=number of elements in the current frame)

Keywords

ASIZE= **ALL** moves an entire area including all bands

BAND= band number to move, the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for GOES IR, 1 for POES)
ALL moves all bands if subsecting a multibanded area

IR= **1** moves image documentation (default=strips off line documentation section)

MOVE= **ALL** moves all areas
TEST lists the first AA command generated to update the sequence, but does not execute it

Remarks

MOVIT locates and displays the area in the range *bsarea* to *esarea* with the most recent time and copies it into *bdarea*. It moves areas with the AA command. To sort *bsarea* through *esarea* by time, copying all areas, attach the keyword **MOVE=ALL** to the command.

Location	Y-coordinate	X-coordinate	Format
A	line	element	0 to 3 digits
E	latitude	longitude	DDD:MM:SS, DDD.fraction or station ID
I	line	element	0 to 5 digits
T	raster	pictel	0 to 3 digits

Examples

MOVIT 1000 1010 3300 3310 MOVE=TEST
This entry displays the first AA command for copying the area with the most recent time between the range of 3300 to 3310.

MOVIT 1000 1010 3300 3310 10 20
This entry locates the most recent time in areas 1000 to 1010 and copies it into the area following the latest time in 3300 to 3310. It also displays the image after the latest image frame from 10 to 20.

MSL

Lists information from the international master weather station list.

Formats

MSL *station [keywords]*
MSL *[keywords] "matchstring*

Default

MSL *station*
This entry lists the *station* location information from the master station list.

Parameters

station	3- or 4-character station ID 5- or 6-digit station ID
"*matchstring*	an alphanumeric string to match; maximum of 20 characters

Keywords

CO=	2-letter country code	
LAT=	*min max*	latitude bounds to search
LON=	*min max*	longitude bounds to search
ST=	2-letter state (PO abbreviation) or international regional code	
TYPE=	**RADAR**	lists radar stations
	RAOB	lists RAOB stations
	SURF	lists surface hourly stations
	SYNOP	lists synoptic stations

Remarks

The MSL command searches the international master weather station list for station identifications, latitude, longitude, station elevation, type of station and regional areas. Station and runway elevations are given in meters.

The codes under DATA TYPES in the output from MSL are:

Code	Meaning
A	TAF forecast
B	coastal/SMARS
C	short range terminal forecast
D	radar
I	3-hourly synoptic
L	PLATF forecast
M	6-hourly synoptic
N	off-hour synoptic
O	AERO
P	PIBAL
R	RAOB
T	METAR
W	service airways (surface hourly)

See Also

Command CCODE lists the country codes.

Examples

MSL TAP
This entry lists the location information for Tapachula, Mexico.

MSL ST=WI
This entry lists all stations in Wisconsin.

MSL ST=WI TYPE=RADAR
This entry lists all radar stations in Wisconsin.

MSL CO=US "AFB
This entry lists all Air Force bases in the United States.

MSL LAT=-40 -10 LON=-160 -110 TYPE=RAOB
This entry lists all RAOB stations between 40° S and 10° S latitude, and 160° E and 110° E longitude, i.e., the Australian continent.

MSL CO=SP "AIRPORT
This entry lists all airport stations in Spain.

O

Switches the image frame position to the opposite frame.

Remarks

To switch to the opposite image frame,

Press: **Alt O**

or

Type: **O**
Press: **Enter**

Since graphics frames have no opposites, their frame numbers do not change.

See Also

Use command LS to assign opposite frame numbers.

OD

Lists the digital area inside the cursor.

Format

OD *mode data a b c [keyword]*

Default

OD
This entry lists the data for the area inside the cursor. The data type is the type stored in the area and depends on the sensor source.

Parameters

mode	**C**	contours data
	F	data frequency distribution
	I	data interval percentage
	L	lists data (default)
	S	lists data by sensor source; GOES visible only
data	**A**	values stored in the area (default)
	B	gray scale brightness conversion (levels 0-255)
	R	radiance
	T	temperature conversion, Kelvin x 10
	valid calibration name, i.e., BRIT, TEMP, RAD, etc.	
a, b, c	for mode I, specify *a* and *b* as the data range; for mode C, specify *a* as the contour interval, and *b* and *c* as the horizontal and vertical replicators	

Keyword

BAND= band number (default=from the frame directory)

Remarks

Mode S lists brightness data by sensor source. Do not use the *data* positional parameter with the S mode.

The output is the same resolution as the digital area. Use DEV= to send output to the line printer. Use command CUR or the left mouse button to set the cursor size (maximum is 51 x 51, except for *mode* L or S). Use the D key to find the available data types in the area.

If you list data values for large cursor sizes, the output is divided into sets. A set is 100 lines by the number of elements that can fit on a text screen. This number depends on the data type, i.e., you can fit more brightness values on a line than IR radiance values. If there are too many elements for a line of data, the set is divided into parts. The set and part numbers are the x and y coordinates, respectively, of the data blocks relative to the upper-left corner of the cursor.

The default *data* parameter is the calibration type. To determine the calibration type, use: **LA** *area* **FORM=ALL**.

Any 2-byte IR or dwell sound GOES data converted to 1-byte data, via command SENAA or AA, assigns missing temperature or brightness values of zero. Brightness values of 255 also indicate missing values. This includes data off the earth edge or missing lines.

Examples

OD F
This entry lists a histogram of the data inside the cursor. It is linearly scaled so that a small peak in the distribution is less than one level on the graph. Consequently, the peak is not displayed.

Suppose you've displayed a GOES VIS image and you want to list the default values in the cursor area. To do this, enter:
OD L
This entry lists the digital brightness values in the cursor area on the image, as the default calibration type for a GOES VIS image is BRIT.

OD L T
This entry lists the data for the area inside the cursor on the text screen. Use this entry with IR data.

Suppose you've displayed a GOES IR area at full resolution (4 km). If the cursor size is 15 lines by 63 elements and you want to list digital radiance data on the text screen, enter:
OD L R
This entry lists 6 blocks of data by sets and parts like this:

Block	Set, Part
1	1, 1
2	1, 2
3	1, 3
4	1, 4
5	1, 5
6	1, 6

Since there are 63 radiance values to list per line and the screen can only display 11, the output is divided into 6 parts. OD displays 11 radiance values for parts 1 through 5 and the last 8 radiance values for part 6.

To determine where the data blocks lie in relation to the cursor, paste the parts together sequentially from left to right. The result looks like this:

	Part 1	Part 2	Part 3	Part4	Part5	Part6
Set 1	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6

OS

Sends a command to the operating system.

Format **OS** *"command*

Default No default; you must specify the command.

Parameter *"command* operating system command to be performed

Remarks The command string should include the correct path, if needed. It should not invoke a program that expects user input while running, as McIDAS-X assumes it is in control.

Enter all operating system commands in lowercase.

Example **OS "cp stuff.dat new.dat**
This entry copies the file stuff.dat to the file new.dat.

PC

Positions the cursor at a desired point on a frame.

Formats

PC C
PC L *station*
PC E *lat lon*
PC I *line ele*
PC T *raster pictel*

Default

No default; you must specify a group of parameters.

Parameters

C	positions the cursor at the center of the frame
L	positions the cursor at the station ID or synoptic ID
E	positions the cursor at the latitude and longitude earth coordinates
I	positions the cursor at the line and element image coordinates
T	positions the cursor at the raster and pictel TV coordinates
station	3- or 4-character station ID 5- or 6-digit station ID
lat	latitude of the location
lon	longitude of the location
line	image or graphics line of the location
ele	image or graphics element of the location
raster	TV raster (line) of the location
pictel	TV pictel (element) of the location

Examples

PC E 36 -98
This entry positions the cursor at 36° North and 98° East.

PC I 3300 1200
This entry positions the cursor at image coordinate line 3300 and element 1200.

PC L MSN
This entry positions the cursor over station MSN (Madison, WI).

PC T 100 356
This entry positions the cursor at TV raster 100, pictel 356.

PC L 72250
This entry positions the cursor over station 72250 (Brownsville, TX).

PCMW

Computes a velocity vector.

Format

PCMW *[keywords]*

Default

PCMW
This entry computes velocity vectors using the cursor center point for locations.

Keywords

COLOR= graphics color level of the plotted wind flags (default=3)

SIZE= relative size of the plotted wind flags (default=12)

Remarks

PCMW calculates velocity vectors by making point-to-point measurements. The maximum number of frames in the loop is 10.

The cursor expands and the color changes as a visual queue indicating that half of a vector measurement was made.

Units of u, v and SPD are in meters per second on the text screen and knots on the frame.

Example

PCMW COLOR=5 SIZE=20
This entry makes the wind barbs color level 5 and their size equal to 20 pixels. The first cursor color for the first half of the wind measurement is color level 2; the second, larger cursor is color level 1.

QA

Deletes digital areas.

Format

QA *barea earea*

Default

QA *barea*
This entry deletes the specified *barea* only.

Parameters

barea beginning area to delete

earea ending area to delete (default=*barea*)

Remarks

Store areas in the mcidas/data subdirectory so other McIDAS commands can access them.

Examples

QA 101 120
This entry deletes areas 101 to 120.

QA 101
This entry deletes area 101 only.

REMAP

Remaps an area into a different projection.

Format

REMAP *sarea darea spline [keywords]*

Default

REMAP *sarea darea*
This entry remaps *sarea* into the *darea* projection.

Parameters

sarea	source area number to remap
darea	destination area number for the remapped image; *darea* contains the projection that *sarea* is remapped into
spline	spline function (default=20 pixels)

Keywords

BAND=	band number (default=lowest band number)	
MERGE=	**YES**	merges the data in *sarea* with the data in *darea*
	NO	overwrites the data in *darea* (default)
OPT=	**SMO**	smooths the image
	OFF	does not smooth the image (default)

Remarks

The *sarea* and *darea* must contain navigation before you can remap images. Display the new image with command DF.

The default for REMAP zeros out the destination area before remapping the source area into the new projection. The MERGE=YES keyword does not zero out the destination area. In this case, the source area data overwrites the destination area data.

For REMAP to be successful, the destination area must meet the requirements below. See command CA for more information.

- The destination area must be 1-band (no specific one) and 1-byte data (ZRES=1 and ZSIZ=1). The source area can be 2-byte or 1-byte data.
- The calibration type must be VISR; the source type BRIT.
- Both the area PREFIX and VALCOD must be zero.

See Also

Use command AAMAP to remap an area into a Mercator or polar stereographic projection.

Examples

REMAP 1 2
This entry remaps area 1 into area 2 where area 1 is a GOES East image and area 2 is a GOES West image. After execution, area 2 contains the remapped GOES East image.

REMAP 710 6000 MERGE=Y BAND=4
This entry remaps the POES data in area 710, band 4, into area 6000, overwriting the area coverage that overlaps.

REPEAT

Repeats a McIDAS-X command.

Format

REPEAT *string start* **TO** *end* **BY** *inc start* **BY** *inc . . . start* **BY** *inc [keyword]*

Default

No default; you must specify the parameters.

Parameters

string	string name containing the command(s) to execute; 1 to 12 characters; any string beginning with these characters is executed
start	starting parameter value
end	ending parameter value
inc	values of the command parameters incremented during the execution of REPEAT
TO	mandatory parameter indicating the range between *start* and *end*
BY	mandatory parameter indicating the increment between *start* and *end* (default=1)

Keyword

MAXN=	maximum number of commands to execute (default=200)

Remarks

Before executing REPEAT, set up your string table using **!** *number* for each parameter to be incremented. *number* must begin at 1 and increment by 1. An exclamation point (!) followed by an integer in a string will increment the parameter on each execution. Parameters may be decremented using a minus sign (-).

REPEAT is a workstation command; command DUO repeats host commands.

Example

If the string table contains the string: LOAD : = DF !1 !2 EC 45 90
Then entering the command,
REPEAT LOAD 2000 TO 2010 BY 2 1 TO 6
will load area 2000 to frame 1, 2002 to frame 2, 2004 to frame 3 . . . and 2010 to frame 6.

ROUTE

Routing table utility.

Formats

ROUTE INIT
ROUTE ADD *code type beg end file [keyword] "text*
ROUTE DEL *code1 . . . coden*
ROUTE LIST *code1 . . . coden*
ROUTE REL *code1 . . . coden*
ROUTE SUS *code1 . . . coden*

Default

ROUTE
This entry lists all routing table entries.

Parameters

INIT	initializes a routing table	
ADD	adds an entry to capture area, MD, grid or text data	
DEL	deletes routing table entries	
LIST	lists routing table entries (default)	
REL	releases routing table entries; begins capturing product	
SUS	suspends routing table entries; stops capturing product	
code (1...n)	product code or the first letter of the product code; you must use a 2-letter code with the ADD option, as using a single-letter code will match all product codes that start with that letter	
type	**AREA**	captures area data
	MD	captures MD data
	GRID	captures grid data
	TEXT	captures text data
beg	beginning area, MD, grid or text file number to store the captured data	
end	ending area, MD, grid or text file number to store the captured data	
file	file name to store captured data; it cannot include an extension; use only with the **TEXT** option	

"text text describing the data

Keyword

PP= posts a process batch file to run after the product is captured

Remarks

ROUTE is primarily used by UNIDATA sites to direct data into storage. The INIT option initializes and creates the product file. You must run it before adding any entries to the routing table. To receive a current list of UNIDATA product codes, contact SSEC operations.

Examples

ROUTE INIT
This entry initializes the routing table.

ROUTE ADD U3 AREA 400 405 "MDR Radar Areas
This entry routes the UNIDATA MDR radar areas with the product code U3 to areas 400 to 405 on the workstation, adding the description "MDR Radar Areas" to the entry listing.

ROUTE ADD RM MD 20 29 "Upper-Air - Mandatory Levels
This entry routes the UNIDATA mandatory upper-air MD files with the product code RM to MD files 20 to 29 on the workstation.

ROUTE DEL U3
This entry deletes from the routing table the entry that captures product code U3.

ROUTE DEL U
This entry deletes from the routing table all entries that capture product codes beginning with the letter U.

ROUTE LIST
This entry lists all entries in the routing table.

ROUTE LIST R
This entry lists all entries that capture product codes beginning with the letter R.

ROUTE SUS U3
This entry suspends the entry in the routing table that captures product code U3.

ROUTE SUS U3 RM
This entry suspends the entries in the routing table that capture product codes U3 and RM.

ROUTE REL M
This entry releases all entries in the routing table that capture product codes beginning with the letter M.

RVF

Restores virtual frames saved with command SVF.

Format

RVF *bframe eframe name*

Default

No default; you must specify the parameters.

Parameters

bframe	beginning frame number to load (default=1)
eframe	ending frame number to load (default=*bframe*)
name	file name used to save the frames with the SVF command; if no extension is specified, .PIX is automatically appended

Remarks

RVF restores the image, graphic, frame directory, navigation, image enhancement and graphics table that were present when the frame was saved with command SVF.

Virtual frames can only be restored to frames that are the same size as the original, and only if the current McIDAS session has the same number of graphics and image levels as were present when the frames were saved.

See Also

Use command LVF to list virtual frame files, their size and number of graphics and image levels.

Use command SVF to save frames to a virtual frame file.

Example

RVF 1 5 PICTURE
This entry reloads frames 1 through 5 from file PICTURE.PIX.

SC

Grids and contours surface data.

Formats

SC *parm map time [keywords]*
SC *p1-p2 map t1-t2 [keywords]*

Default

SC *parm map*
This entry contours *parm* on *map* in graphics color level 2 using the current day and time.

Parameters

parm	**ABV**	absolute vorticity
	ADV	advection
	CIGH	height of the ceiling (100 feet); for ISFC only
	DVG	divergence (10^{-6} sec^{-1})
	GUS	wind gust (meters/second)
	MIX	mixing ratio (g/kg)
	PCP	precipitation (inches)
	PSL	altimeter setting converted to millibars
	SNO	snow cover (inches)
	SPD	wind speed (meters/second)
	STR	streamline
	T	temperature (° C)
	TD	dew point (° C)
	THA	theta (K)
	THAE	theta E (K)
	VIS	visibility (miles)
	VOR	vorticity (10^{-6} sec^{-1})
	ZCH	height of the ceiling (100 feet); for SVCA only
	ZCL	height of the first non-ceiling cloud deck (100 feet); for SVCA only
	ZCL1	height of the first non-ceiling cloud deck (100 feet); for ISFC only
	ZCL2	height of the second non-ceiling cloud deck (100 feet); for ISFC only
	ZCM	height of the second non-ceiling cloud deck (100 feet); for SVCA only
	ZS	station elevation (meters)
map	**MID**	Midwest USA
	NA	North America
	SAT	satellite projection
	USA	USA
	Post Office abbreviation	

time hour; defaults to the previous hour if the current time is less than 10 minutes past the hour (default=current)

p1 - p2 parameter difference used in contouring; subtract *p2* from *p1*

t1 - t2 time difference used in contouring; subtract *t2* from *t1*

Keywords

CINT= contour interval (default is parameter dependent)

COLOR= graphics color level; use positive numbers for solid lines and negative numbers for dashed lines (default=2)

DAY= *d1 d2* year and day; use two values when contouring differences, YYDDD (default=current)

GRA= graphics frame number

GRIDF= grid file number (default=current grid file)

LAT= *min max* minimum and maximum latitude extents

LON= *min max* minimum and maximum longitude extents

MDF= *f1 f2* surface history file number; use two values when contouring differences (default=last digit of the current Julian day)

UNIT= **A** plots values in American units
M plots values in metric units
This keyword is valid for temperature and dew point only.

Remarks

If you do not specify keywords COLOR, CINT, LAT, LON and MDF in the command, the string table is searched for the keywords. If the results are unexpected, use command TL to list the string table. The grid file is generated and the pointer set the same as the terminal number.

Parameter advection (ADV) or divergence (DVG) is done by appending ADV or DVG, e.g., TADV, PSLDVG.

The day and time default to the current day and time, not the last available data on the workstation.

Specify the keyword DAY= when using history data.

Examples

SC STR SAT 12 MDF=1000
This entry contours streamlines at 12Z from history file 1000 in a satellite projection.

SC T MID
This entry contours the temperature over the Midwest for the current day and time.

SC PCP GRA=5 COLOR=7 LAT=20 40 LON=85 105
This entry contours precipitation in graphics color level 7 on graphics frame 5. It uses a map with latitudes of 20° and 40° N and longitudes of 85° and 105° W.

SC PSL MID 18-18 MDF=7500-7501 DAY=90010-90009
This entry contours the 24-hour sea level pressure change from 18 GMT, day 009, to 18 GMT, day 010, 1990.

To generate derived parameters such as vorticity advection (VORADV), first create a vorticity grid as follows:

SC VOR USA

Watch the text screen for the location of the U and VOR grids, then enter this command substituting the correct grid numbers for *u-grid* and *vor-grid*:

IGG MAKE *u-grid* **ADV** *vor-grid*

SCHE

Adds a schema to the schema file.

Format

SCHE *name*

Default

No default; you must specify the member name.

Parameter

name member name of the schema LW file

Remarks

To see an example of a schema file, enter **LSCHE** *name* on the host. New schema files for the workstation should have the same format. You can create them on a word processor and then place them in the mcidas/data subdirectory.

Before registering a newly created schema, use command DOSTOLW to create an LW file containing the schema text. Then use command SCHE to register the new schema in the workstation schema file. Do not use DOSTOLW on schema files supported in McIDAS, i.e., files prefixed with DC.

See *Registering MD File Schemas* in the **Introduction** section of this manual for more information.

Examples

SCHE DCISFC
This entry adds schema ISFC, which is the schema named in LW file DCISFC, to the workstation schema file. The current version of this schema is included with each McIDAS-X upgrade.

SCHE MYSC
This entry adds the schema named in the LW file MYSC to the workstation schema file.

SEE

Lists the text in an LW file.

Format

SEE *file nchars [keywords]*

Default

SEE *file*
This entry lists the contents of the named LW file on the screen.

Parameters

file	name of the LW file to list
nchars	number of characters per line (default=80)

Keywords

BEGIN=	first line number to list; if negative, the number of the first byte to list (default=0)
LAST=	number of lines from the end of the file to list
NLINES=	number of lines to list (default=500) **ALL** lists all lines
STEP=	number of lines skipped between the lines listed; if negative, it steps backwards; this keyword only works on 80-character ASCII LW files (default=1)

Remarks

Command SEE attempts to list both LW files (80-character records with no linefeeds) and text format (up to 80 characters with imbedded linefeeds). As a result, keyword LAST may not work properly with the text format.

Examples

SEE LOGON
This entry lists file LOGON starting at line zero (the beginning) stepping forward 1 line until it reaches the end of the file.

SEE MYFILE BEGIN=25
This entry lists the text in LW file MYFILE beginning with line 25.

SEE SCHEMA BEGIN=99 NLINES=15 STEP=-1
This entry lists file SCHEMA starting at line 99, stepping backwards by 1 line for 15 lines.

SENAA

Sends areas from the workstation to the mainframe.

Formats

SENAA *sarea darea locate y-coord x-coord mag line ele [keywords]*
SENAA *sarea darea locate station mag line ele [keywords]*

Default

SENAA *sarea darea locate station*
This entry copies the digital data from *sarea* to McIDAS-MVS *darea* using the *locate* coordinate type.

Parameters

sarea source area number of the data (no default)

darea destination area number (no default)

locate coordinate type used to load images; use one of these coordinate systems:
E earth
I image

followed by one of these locations:
U upper-left corner
C centered
D lower-right corner

y-coord y-axis coordinate (default=first line)

x-coord x-axis coordinate (default=first element)

station station ID, e.g., MSN, DSM, 2C2; it must be preceded by EU, EC or ED

mag blowup or blowdown factor of the image (default=1)

line number of lines in *darea* (default=1024)

ele number of elements in *darea* (default=1280)

Keywords

ASIZE= **ALL** moves the entire area including all bands; specify only *sarea* and *darea* when using ASIZE=ALL

BAND= band number to move, the range is 1 to 32; command LA will list bands higher than 9 as A, B, C, etc.; they must be entered as integer, that is, A=10, B=11, etc. (default=8 for GOES IR, 4 for POES)
ALL moves all bands if subsecting a multibanded area

EMAG= element only blowup or blowdown factor (default=1)

LMAG= line only blowup or blowdown factor (default=1)

MODE= **PACK** sends data in compressed form
UNPACK sends data in uncompressed form (default)

PAKSIZ= number of bits per pixel to send when packing data, 6 or 8; see the Remarks (default=8)

STYPE= **VISR** reduces 2-byte data to 1-byte; see the Remarks

Remarks

The Z column in the area directory indicates the number of bytes per pixel in the area. Visible data is usually 1-byte, while most IR data is 2-byte. The 2-byte data is usually a raw value which can be operated on with calibration coefficients to convert the data to radiance, temperature or brightness. Keyword STYPE=VISR converts the original data to brightness data.

SENAA can extract single bands from multibanded data and retain full calibration when the area is being sent to the mainframe. Multibyte data can only be sent in uncompressed form.

When sending single-byte data, you can reduce the transmission time by specifying PAKSIZ=6. SENAA ignores the two bits that are not useful for image display. IR data requires all eight bits of data.

If you're running command SENAA and then terminate it with either the KILL or slash (/) command, you will have to restart the McIDAS session.

Examples

SENAA 1 7984 EC MSN X 500 640
This entry transfers area 1 from the workstation to mainframe area 7984. The image, with earth coordinates, is centered on Madison, WI. It is 500 lines by 640 elements.

SENAA 2 2365 EC 43 89 X 350 640 STYPE=VISR
This entry transfers area 2 from the workstation to mainframe area 2365. The image, with earth coordinates, is centered over Madison, WI., and is 350 lines by 640 elements. STYPE=VISR reduces the 2-byte data to 1-byte data. This speeds up the transfer, but the resulting area will not contain radiance information from the workstation area.

SENGRD

Sends grids from the workstation to the mainframe.

Formats

SENGRD *sgridf* **ALL** *dgridf dgrid*
SENGRD *sgridf bgrid egrid dgridf dgrid*

Default

SENGRD *sgridf* **ALL** *dgridf*
This entry sends all grids in the workstation grid file *sgridf* to the mainframe grid file *dgridf*.

Parameters

sgridf	source grid file number (no default)
ALL	sends all grids in the grid file
bgrid	beginning grid to send (no default)
egrid	ending grid to send (default=*bgrid*)
dgridf	destination grid file number on the mainframe (no default)
dgrid	destination grid number in the mainframe grid file (default=first available)

Remarks

This command sends grids from a workstation grid file to a mainframe grid file. If the destination grid file already exists, the grids are added to the grid file. If no grid file exists, one is created with the same specifications as the source grid file.

Check the maximum number of grids allowed in the mainframe's grid file before using SENGRD. The default maximum is 159 grids, but no practical limit exists. Use **IGU MAKE** to create large grid files before transferring data.

Examples

SENGRD 1 ALL 7200
This entry sends all grids in workstation grid file 1 to the mainframe grid file 7200. If grid file 7200 exists, it appends the grids to the file. If the grid file does not exist, it creates one before sending the grids.

SENGRD 1200 20 X 1205 30
This entry sends grid 20 from the workstation grid file 1200 to the mainframe grid file 1205, grid 30.

SENLW

Sends an LW file from the workstation to the mainframe.

Format

SENLW *sfile dfile [keywords]*

Default

No default; you must specify the parameters.

Parameters

sfile name of the source LW file on the workstation, up to 12 characters for path+name (default path=mcidas/data)

dfile name of the destination LW file on the host

Keywords

BEGIN= begins writing word zero of *sfile* at the specified word in *dfile*; do not use with keyword RANGE

FLIP= **YES** flips bytes of 32-bit words
NO does not flip bytes (default)

RANGE= *beg end* beginning and ending pages to send; they must be LW file page numbers; 1024 words per page

TRANS= **A** translates ASCII to EBCDIC; the source LW file must contain only ASCII characters

Remarks

To send an LW file from the host to the workstation while in the local mode, precede SENLW with a period (.).

You cannot send LW files to the mainframe that include an extension; the period is invalid.

Examples

SENLW LOCALFILE HOSTFILE
This entry sends the LW file LOCALFILE to the host, renaming it HOSTFILE.

SENLW IMAGE.ET IMAGE
This entry sends LW file IMAGE.ET to the mainframe, converting the name to IMAGE.

SENST

Sends the current string table from the workstation to the mainframe.

Format

SENST HOST *name initials*

Default

No default; you must specify the parameters.

Parameters

HOST string table destination; you must enter **HOST** (no default)

name name on the mainframe

initials author's initials (default=current initials)

Remarks

The current string table is the default string table on a workstation.

Use the command **.TU REST** to restore the string table once it is on the host.

Use host command SENST to send string tables to the workstation.

Example

SENST HOST DEMO
This entry sends the current string table to the mainframe and stores it with the name DEMO under the current user's initials.

SF

Displays a frame.

Format

SF *frame*

Default

SF
This entry displays frame one.

Parameter

frame the frame number to display (default=1)

Remarks

Press the F key to list the current frame number.

Example

SF 12
This entry displays frame 12.

SHOWVG

Displays virtual graphics.

Format

SHOWVG *virt bframe eframe [keywords]*

Default

SHOWVG *virt*
This entry plots virtual graphic *virt* on the current frame.

Parameters

virt	virtual graphics number; the range is 1-9999
bframe	beginning graphics frame number (default=current)
eframe	ending graphics frame number (default=*bframe*)

Keywords

ELE=	offsets the graphic by the specified number of elements (default=0)
LINE=	offsets the graphic by the specified number of lines (default=0)

Remarks

Command SHOWVG restores a virtual graphic saved on the workstation. You create virtual graphics by appending keyword VIRT to any program that creates graphical output.

To list the virtual graphics saved on the workstation, use the local command DMAP. **DMAP VIRT** lists all the virtual graphics files saved on the workstation. Virtual graphics files are named VIRT*nnnn* where *nnnn* is the virtual graphics number.

Use the keywords to reposition the graphic. The specified values are constants that are added to the line and element coordinates when displaying the graphic.

Examples

SHOWVG 1000 1 2
This entry displays virtual graphic 1000 on frames 1 and 2.

SHOWVG 1000 1 2 LINE=80 ELE=100
This entry is the same as the one above except it displays the virtual graphic 80 lines lower and 100 elements to the right of the original position.

SKE

Enters a McIDAS-X command in the system command scheduler.

Format

SKE *day time repeat interval [keywords] "command*

Default

SKE *day "command*
This entry executes the McIDAS-X *command* on the *day* specified. The start time is 0Z; the repetition is 1; the interval is 1 hour.

Parameters

day	day to initiate the command, YYDDD
time	time to initiate the command, HH:MM:SS; use colons when specifying the time (default=1 hour)
repeat	number of command executions; if you enter 999999, the word MANY replaces it in the header (default=1)
interval	time interval between command executions, DDDHH:MM:SS; use colons when specifying the time; for one day enter 24:00:00 or 100:00:00 (default=1 hour)
"command	command to execute; the command length may be up to 160 characters (including spaces) minus the preceding positional parameters; to run the command on the host, precede it with a period (.)

Keywords

ID=	4-digit number to identify the command in the scheduler (default=system assigned number)
NAME=	user ID to use for host commands
PROJ=	project number charged when you execute the command (default=current)
TOL=	late tolerance, HH:MM:SS; if the workstation is down or too busy for the command to run, the late tolerance determines how much time can pass before the command is skipped; if 10 to 24 hours are specified, the word BIG appears in the header; three seconds (:00:03) is the minimum acceptable time (default=1 hour)

Remarks

The keyword ID must be a 4-digit number (or omitted). Use it to refer to a schedule entry for listing, suspension and deletion.

To run a command stored in the workstation string table, precede the string name with two pound (##) signs. That is, enter "*##string* in place of "*command*. For example:

```
TE MAP "MAP MID
SKE 92100 12 "##MAP
```

To run a command stored in the host string table, precede the string name with four pound signs. That is, enter ".*####string*.

If you schedule a command from the host, schedule a LOGON first or the command will not execute.

Place a period (.) in front of any command to be run on the host.

Examples

SKE 82340 13:30 2 24:00 ID=3003 "LA 1 10
This entry runs the local command LA at 1330 GMT on each of two consecutive days (82340, 82341). The assigned ID for reference is 3003.

SKE 85100 00:00:01 999999 PROJ=7777 "DF 101 1 EC MSN
This entry runs command DF once an hour every day (999999 is listed as MANY by SKL), beginning with day 85100 at one second after 0 GMT.

SKE 89137 14:40 1 ".SENAA 109 5 X X X 1 350 640
This entry runs command SENAA from the host at 1440 GMT on 89137. The computer time is charged to the default project number, which is the one used in the LOGON command scheduled just prior to the execution of this command.

SKEWT

Plots a sounding on a skew T thermodynamic diagram.

Formats

SKEWT *station time [keywords]*
SKEWT OUTL *[keywords]*

Default

SKEWT *station*
This entry plots a skew T of *station* for the current day and time, erasing the graphics before plotting.

Parameters

station	5-digit station identification number (e.g., 72645 is Green Bay) or a sequence number in a satellite retrieval file
time	observation time, HH (default=nearest RAOB, 0 or 12)
OUTL	displays a skew T diagram without sounding

Keywords

COLOR=		graphics color level of the sounding data (default=3)
DAY=		year and Julian day, YYDDD (default=current)
GRA=		graphics frame number (default=current)
INIT=	**YES**	initializes the graphics colors (default)
	NO	does not initialize the graphics colors
MDF=		MD file number of the mandatory level data (default=last digit of the current Julian day plus 10)
MIX=	**YES**	draws mixing ratio lines (default)
	NO	omits mixing ratio lines
OLAY=	**YES 1**	overlays existing plot; draws new sounding in graphics color level 3
	YES 2	overlays existing plot; draws new sounding in graphics color level 2
	NO	does not overlay existing plot; erases graphics first (default)
PTOP=		top pressure level on the diagram rounded to multiples of 50 mb (default=100)

RANGE=	*min max*	Celsius temperature range on the diagram (default= -90 40)
ROW=		row number of the data in the RAWI schema (default=first occurrence of the data)
SIG=		MD file number of the significant level data (default=current)
TYPE=	**RAWI**	uses rawinsonde schema
	VAS	uses VAS created data
UNIT=	**FT**	plots height in feet on the left axis
	M	plots height in meters on the left axis
	MB	plots pressure in millibars on the left axis (default)
VDEV=	**YES**	displays error message if sounding is unavailable
	NO	does not display error message (default)

Remarks

Graphics are automatically erased before each plot. Heights are recomputed for hydrostatic consistency.

Any number of overlays may be plotted, but successive wind barbs and headers will overwrite the previous overlay's wind barbs and headers due to space limitations.

Dew point temperature is not plotted when dew point depression (temperature minus dew point temperature) rounds to a whole number that exceeds 30.

Examples

SKEWT 72645 12 PTOP=300
This entry plots a skew T diagram for station 72645 at 12Z. The highest pressure plotted is 300 mb.

SKEWT OUTL RANGE= - 40 25
This entry plots a skew T diagram without the station plot, from -40° to 25° Celsius.

To plot two soundings on one diagram, enter these two commands:

SKEWT 72655
This entry plots a skew T diagram for station 72655 at the current time.

SKEWT 72655 3 OLAY=Y COLOR=5
This entry plots a skew T diagram for station 72655 at 3 GMT on the same diagram in red.

SKL

Lists the entries in the command scheduler file.

Format

SKL *bid eid [keywords] "matchstring*

Default

SKL
This entry lists all schedule entries for your terminal.

Parameters

bid	beginning ID number to list; the range is 1-9999 (default=lists all entries)
eid	ending ID number to list (default=*bid*)
"*matchstring*	lists only the entries containing this string; maximum of 40 characters (default=no match performed)

Keywords

FORM=	**ALL**	uses as many lines of output as needed to list the entire command
PROJ=	*min max*	project number or range of numbers in the scheduler to list (default=1000 9999)
SORT=	**ID**	sorts entries by ID number (default)
	PROJ	sorts entries by project number
	RAW	lists in the order of occurrence in the schedule (unsorted)
	TIME	lists entries and sorts times in ascending order

Remarks

If you omit the beginning and ending ID numbers, all entries are listed. The output is described below.

Column	Output	Description
1	T	terminal number
2	ID	command identification number
3	X/S	S suspends the scheduled command; X disables the terminal's schedule
4	Next Executn	next day and time to execute a command

Column	Output	Description
5	#REM	number of remaining commands; if SKE repetitions is a 6-digit number, this will say MANY
6	Interval	day and time interval between executions; the format is DDHH:MM:SS, entered by **SKE** *interval* where *interval* is 1 hour; if *interval* is 24, this output is listed as 1000000 (1 day)
7	TOL	late tolerance time, HH:MM:SS; any entry over 9 hours is listed as BIG
8	NAME:	initials used to log on
9	PROJ:	project number used to log on
10	Command:	command string to execute

Example

SKL 420 430 PROJ=7000

This entry lists the scheduled commands on the current terminal for project 7000 between 420 and 430.

SKU

Command scheduler utility function.

Formats

SKU *option bid eid [keywords]*
SKU MSG *device*
SKU CHA *bid eid [keywords] "command*
SKU DOIT *bid eid*
SKU ON
SKU OFF

Default

SKU *option bid*
This entry performs *option* on *bid*, affecting the current terminal number only.

Parameters

option	**DEL**	deletes the entry for the schedule
	REL	releases the entry so the command executes at the next scheduled time
	SUS	suspends the entry so the command will not execute, but does not delete the entry from the scheduler
MSG		device specified for the scheduler text output
CHA		changes the entry; depends on the keyword used
DOIT		executes a schedule entry without decrementing the counters
ON		turns the scheduler on
OFF		turns the scheduler off
bid		beginning ID number
eid		ending ID number (default=*bid*)
device	**C**	sends output to the CRT
	N	does not list the output
"command		new command or text to replace the current command

Keywords

NAME= *old new* changes the old user ID to the new user ID

PROJ= *old new* replaces the old project number with the new project number

Remarks

To change a schedule entry, you must be logged on to the project number listed in the entry.

Use parameter DOIT to test the schedule entries.

Examples

SKU SUS 1001 1009
This entry suspends the schedule entries with IDs 1001 to 1009.

SKU CHA 1001 1009 PROJ=7000 5630
This entry changes the schedule entries with IDs 1001 to 1009 running at your terminal under project 7000 to run under project 5630.

SKU DOIT 5
This entry executes the command scheduled in ID number 5. It does not change the execution time or decrease the counter.

SL

Lists surface station data.

Formats

SL *units station btime etime inc [keywords]*
SL *btime etime inc*
SL *btime etime*
SL SET MDF= DAY=
SL RESET

Default

SL
This entry lists the current time's data availability.

Parameters

units	**A** lists values in American units **M** lists values in metric units; see the Remarks (default)
station	3- or 4-character station ID or state Post Office abbreviation; this can be one or more stations
btime	beginning observation time of the station (default=current) or, the beginning time of the available data information listed (default=lists the current time's data availability)
etime	ending observation time of the station, or the ending time of the available data information listed (default=*btime*)
inc	time increment for the time range, HH (default=1)
SET	directs SL to read from the specified history MD file and day; see the Remarks
RESET	resets the MD file to use a real-time MD file; do this after using a history MD file; see the Remarks

Keywords
(General)

DAY=	year and Julian day, YYDDD (default=current)
DIR=	wind direction
GUS=	wind gusts
MDF=	surface history MD file number (default=current)
PCP=	precipitation total
PSL=	altimeter setting in millibars
SNO=	snow cover

	SPD=	wind speed
	T=	temperature
	TD=	dew point temperature
	VIS=	visibility
	WX=	weather, 1 to 8 characters
Keywords (ISFC schema only)	**CC1=**	first non-ceiling cloud coverage; the range is 0-3 where 0 is clear, 1 is scattered, 2 is broken, 3 is overcast
	CC2=	second non-ceiling cloud coverage; the range is 0-3
	CIGC=	ceiling cloud coverage; the range is 0-3
	CIGH=	height of the ceiling (100 feet)
	CO=	2-letter country code; lists all reporting stations in the selected country
	ZCL1=	height of the first non-ceiling cloud deck (100 feet)
	ZCL2=	height of the second non-ceiling cloud deck (100 feet)
Keywords (SVCA schema only)	**CCH=**	high cloud coverage; the range is 0-3 where 0 is clear, 1 is scattered, 2 is broken, 3 is overcast
	CCL=	low cloud coverage; the range is 0-3
	CCM=	middle cloud coverage; the range is 0-3
	ZCH=	height of the ceiling (100 feet)
	ZCL=	height of the first non-ceiling cloud deck (100 feet)
	ZCM=	height of the second non-ceiling cloud deck (100 feet)

Remarks

When you specify *units*, its value is stored in a string named SLUNIT. The SET option creates strings named SVCA and DAY which are set to the values specified by keywords MDF and DAY. Since subsequent SL commands read these three string values, you only need to specify them when changing their values. The RESET option deletes strings SVCA and DAY, and resets string SLUNIT to its default value so that subsequent SL commands use the default MD file, day and units.

For information on history files and output, enter **SL HELP**.

If you use keyword CO, data from all reporting stations in that country is listed. Use command CCODE to find the correct 2-letter IDs. Keyword CO works only with ISFC schema MD files.

The day and time default to the current day and time, not the last available data on the PC. If you are not sure that your data is still current, use the time parameters.

Real-time surface files on the PC are the same as on the mainframe (1-10); the last digit of the Julian day corresponds to the MD file.

The output units of the parameters are shown below.

Parameters	American	Metric
wind speed	knots	m/s
wind gusts	knots	m/s
visibility	miles	km
cloud height	feet	meters
precipitation, snow	inches	cm
temperature	degrees F	C
dew point	degrees F	C

Examples

SL MSN 12 18 2
This entry lists surface station data for Madison, WI, from 12 to 18Z at 2-hour increments.

SL SET MDF=1000 DAY=91300
This entry points to history MD file 1000. All SL commands run will now access MD file 1000 until an SL RESET is entered.

SL ORD 15 10 DAY=92001 92002
This entry lists the surface data for Chicago's O'Hare Airport from 15 GMT on day 92001 to 10 GMT on day 92002.

SL A WI 0
This entry lists surface data in American units for all Wisconsin stations for 0 GMT.

SL 12 23 WX=TRW
This entry lists all stations for the current day with thunderstorms between 12 and 23 GMT.

SL M MSN DSM 12 15
This entry lists the reports for Madison and Des Moines between 12 and 15 GMT in metric units.

SL 6 :
This entry lists data availability from 6 GMT to the current time.

SP

Plots surface data.

Formats

SP *parm map time [keywords]*
SP *p1-p2 map t1-t2 [keywords]*

Default

SP *parm map*
This entry plots *parm* on *map* in graphics color level 3 using the current day and time.

Parameters

parm	**CIGH**	height of the ceiling (100 feet); ISFC only
	CLD	cloud cover; the range is 0 (clear) to 3 (overcast)
	GUS	wind gust (meters/second)
	ID	station identification
	MIX	mixing ratio (g/kg)
	PCP	precipitation (inches)
	PLOT	plots station model in the format: WX * (wind flag) T PSL T CLD ID
	PSL	altimeter setting in millibars
	SNO	snow cover (inches)
	SPD	wind speed (m/s)
	T	temperature (° C)
	TD	dew point temperature (° C)
	THA	theta (K)
	THAE	theta E (K)
	VIS	visibility (miles)
	WIN	wind, DDFF, FF (m/s) meteorological flags Barb = 5 ms^{-1} (~ 10 kts); Flag = 25 ms^{-1} (~ 50 kts)
	WX	weather text
	WXS	weather symbols
	ZCH	height of the ceiling (100 feet); SVCA only
	ZCL	height of the first non-ceiling cloud deck (100 feet); SVCA only
	ZCL1	height of the first non-ceiling cloud deck (100 feet); ISFC only
	ZCL2	height of the second non-ceiling cloud deck (100 feet); ISFC only
	ZCM	height of the second non-ceiling cloud deck (100 feet); SVCA only
	ZS	station elevation (meters)
map	**MID**	Midwest USA
	NA	North America
	SAT	satellite projection
	USA	USA
	Post Office abbreviation	

time hour; defaults to the previous hour if the current time is less than 10 minutes past the hour (default=current)

p1 - p2 parameter difference used in plotting; subtract *p2* from *p1*

t1 - t2 time difference used in plotting; subtract *t2* from *t1*

Keywords

COLOR= graphics color level (default=3)

DAY= *d1 - d2* year and day; use two values when plotting differences, YYDDD (default=current)

GRA= graphics frame number (default=current)

LAT= *min max* minimum and maximum latitude extents

LON= *min max* minimum and maximum longitude extents

MDF= *f1 - f2* surface history file number; use two values when plotting differences (default=last digit of the current Julian day)

UNIT= **A** displays values in American units
M displays values in metric units
(only used for temperature and dew point)

Remarks

If you don't specify keywords COLOR, LAT, LON and MDF, the string table is searched for them. If the results are unexpected, use TL to list the string table or TD ALL to delete it. Day and time default to the current day and time, not the last available data on the workstation.

Examples

SP T MID
This entry plots temperatures over the Midwest for the current day and time. Specify 'time' if you didn't just download the current data.

SP WIN LAT=20 40 LON=80 100 COLOR=1
This entry plots winds in graphics color level 1 with latitude bounds 20°- 40°N and longitude bounds 80°- 100°W for the current day/time.

SP PLOT SAT 18 DAY=91250
This entry plots a station model over a satellite projection at 18 GMT, day 91250.

SP T-TD WI
This entry plots the current dew point depression for Wisconsin.

SP T WI 12-12 MDF=2-1 DAY=92010-92009 UNIT=A
This entry plots the 24-hour temperature change in degrees Fahrenheit from 12 GMT, day 92009, to 12 GMT, day 92010.

SU

Image data stretching utility.

Formats

SU INI *name type unit [keywords]*
SU MAKE *name inlo inhi blo bhi*
SU LIST *string*
SU TABLE *name*

Default

SU LIST
This entry lists all the stretch tables saved on the workstation.

Parameters

INI initializes the stretch table defining the type of calibration, calibration units and initial breakpoint settings; must be done for making a new stretch table

MAKE enters breakpoints in the table using brightness levels

LIST lists the saved stretch tables (default=lists all stretch tables saved on the workstation)

TABLE lists the breakpoints stored in a stretch table

name name of the stretch table; 8 characters maximum

string lists the stretch tables beginning with this character string

type

AAA	uses 2-byte GOES data calibration for the input table
GMS	uses GMS data calibration
MSAT	uses METEOSAT data calibration
QTIR	uses POES data quick calibration
TIRO	uses POES data calibration
VAS	uses 2-byte GOES data calibration (for use with pre-1987 data only)
VISR	uses 1-byte GOES data calibration
WSI	uses WSI radar data calibration

(default=use on any calibration type)

unit

RAW	raw data calibration units of the input data
BRIT	brightness (default)
RAD	radiance
ALB	albedo
TEMP	temperature

user defined units; use D to list all units for a specific image

inlo low value of the breakpoint for input values; specify in units input with the *unit* parameter (no default)

inhi high value of the breakpoint for input values; specify in units input with the *unit* parameter (no default)

blo low value of the breakpoint for output brightness values; the range is 0-255 (no default)

bhi high value of the breakpoint for output brightness values; the range is 0-255 (no default)

Keywords

BAND= band number for the input data calibration type (default=ALL)

RANGE= *min max* minimum and maximum values of the input data; these values define the boundary of input values that can later be stretched; the range is 0-255

Remarks

Use SU to make the tables that are specified with the SU keyword in command DF. The SU command sets up tables to stretch raw, radiance, temperature, albedo or brightness values (depending on calibration) to a user-defined brightness value. Then you can use command EU to color the brightness ranges known to correspond with the new values.

When you specify the keyword RANGE, all input values less than or equal to *min* are assigned an output value of zero; all input values greater than or equal to *max* are assigned an output value of 255. Any additional breakpoints specified with the MAKE option that fall outside of *min* and *max* are assigned 0 or 255, accordingly. If you don't specify RANGE, the stretches' slope previous to the first breakpoint is a continuation of the line formed by the first two breakpoints. Likewise, the slope following the last breakpoint is a continuation of the line formed by the last two breakpoints.

Stretch tables are general structures that can be used on any workstation. To transfer a stretch table to another workstation, use a diskette or local network. Also, the file can be transferred to the mainframe with SENLW and retrieved with .SENLW from another workstation.

Examples

SU INI TIRORAD3 TIRO RAD BAND=3
This entry initializes the table TIRORAD3 to be used on the radiance values of TIROS band 3 images. Each new stretch table must be initialized.

SU MAKE TIRORAD3 0 1.2 20 220
This entry sets the breakpoint values in the above table TIRORAD3. Input zero corresponds to output 20; input 1.2 corresponds to output 220.

SU TABLE TIRORAD3
This entry lists the breakpoints in table TIRORAD3, along with information on BAND, calibration type and units.

SU INI MSATEMP1 MSAT TEMP BAND=1
This entry initializes the table MSATEMP1 to contain breakpoints in temperature for METEOSAT band 1 data.

SU MAKE MSATEMP1 240 260 20 240
This entry stretches the temperature values from 240 to 260 in table MSATEMP1, over brightness values 20 to 240.

SU INI GENBRIT X BRIT RANGE=100 200
This entry initializes the table GENBRIT to be used on any calibration type with brightness units. The brightness values from 100 to 200 are stretched to brightness values 0 to 255. Brightness values entered with **SU MAKE** that are less than 100 or over 200 are assigned 0 or 255, respectively.

SU LIST GEN
This entry lists all the stretch tables saved on the workstation that begin with GEN.

SVF

Saves frames to a virtual frame file.

Format

SVF *bframe eframe file*

Default

No default; you must specify the parameters.

Parameters

bframe	beginning frame number to save (default=1)
eframe	ending frame number to save (default=*bframe*)
file	file name in which to save the frames, maximum of 12 characters including the extension; if no extension is specified, .PIX is automatically appended

Remarks

SVF saves the image, graphic, frame directory, navigation, image enhancement and graphics table to the specified file in the mcidas/data directory.

See Also

Use command RVF to restore these files to frames. Use command LVF to list the virtual frame files.

Example

SVF 1 5 PICTURE
This entry saves frames 1 through 5 in the file PICTURE.PIX.

SVGIF

Saves a McIDAS frame to the GIF format.

Format

SVGIF *frame name*

Default

No default; you must specify the file name.

Parameters

frame frame number to save (default=current)

name name of the file in which to save the frame, 12 characters maximum; if you don't specify an extension, the extension .GIF is automatically appended (no default)

Remarks

The file is saved in the current directory.

To display the GIF format file, use the UNIX command xloadimage in a separate xterm.

Example

SVGIF 5 PICTURE
This entry saves frame 5 in the file PICTURE.GIF.

SYSKEY

Sets system values for local McIDAS workstation networks.

Format

SYSKEY *name*

Default

SYSKEY
This entry sets the system values to the defaults in SYSKEY.DOC.

Parameter

name name of the text file in the mcidas/data subdirectory containing the values used to create the SYSKEY.TAB file (default=SYSKEY.DOC)

Remarks

> **Caution !**
> Creating or changing SYSKEY.TAB impacts the entire McIDAS workstation network. SYSKEY should be used by the network administrator only.

This command reads the values from text file SYSKEY.DOC into the LW file SYSKEY.TAB. The parameters defined for local McIDAS workstation networks are stored in SYSKEY.TAB. These parameters contain alphanumeric and integer values needed by workstations in the network. Words 2100-2499 are reserved for parameters unique to your network.

The SYSKEY.DOC file must be in a text format, i.e., lines end with a linefeed. To change SYSKEY.DOC, use a text editor. Alphanumeric values are limited to 4 characters; integer values are limited to 10 digits.

Use command SYSVAL to list values directly from SYSKEY.TAB. SYSKEY.TAB values can be placed directly into local command entries by using **#SYS***(word)* to replace a parameter or keyword value. For example, **LA 1 #SYS(2100)** will list areas 1 to the value stored for entry 2100.

SYSVAL

SYSKEY utility.

Formats

SYSVAL LIST *bword eword*
SYSVAL CHANGE *word value*

Default

No default; you must specify the parameters.

Parameters

LIST	lists the values stored in the LW file SYSKEY.TAB
CHANGE	changes the value of a SYSKEY word
bword	beginning word number to list (default=1)
eword	ending word number to list (default=*bword*)
word	SYSKEY word number
value	new value to place in SYSKEY; must be numeric

Remarks

Caution!
Creating or changing SYSKEY.TAB impacts the entire McIDAS workstation network. The SYSVAL CHANGE option should be used by the network administrator only.

The parameters defined for local McIDAS workstation networks are stored in SYSKEY.TAB. These parameters contain alphanumeric and integer values needed by workstations in the network. Words 2100-2499 are reserved for parameters unique to your network. For a description of SYSKEY.TAB, see the file SYSKEY.DOC. This file should be updated only by the network administrator.

SYSKEY.TAB values can be placed directly into local command entries by using **#SYS***(word)* to replace a parameter or keyword value. For example, **LA 1 #SYS(2100)** lists areas 1 to the value stored for entry 2100.

Example

SYSVAL LIST 2000 2010
This entry lists the contents of SYSKEY.TAB words 2000-2010.

TD

Deletes one or more strings from the current string table.

Formats

TD *name*
TD PREFIX *prefix*
TD ALL
TD ALL GLOB

Default

No default; you must specify the parameters.

Parameters

name	a single string name to delete
prefix	deletes all strings that begin with this prefix
PREFIX	searches for the string *prefix*
ALL	clears the system table, except for global strings
GLOB	deletes all strings, including global strings

Remarks

A string name whose first character is a question mark (?) is defined as global. Global strings remain in the table unless you delete them by entering: **TD ALL GLOB**.

See Also

Command TL lists strings. Command TE edits strings. Command TU is the string utility that saves the current string table. Command SENST sends string tables to the host.

Examples

TD 9
This entry deletes the string named 9.

TD PREFIX CH
This entry deletes all strings that begin with CH.

TD ALL
This entry deletes all strings except those preceded by a question mark (?).

TD ALL GLOB
This entry deletes all string tables, including those preceded with a question mark.

TE

Enters a string in the string table.

Format

TE *string* *"text*

Default

TE *string*
This entry assigns blanks to the *string* name.

Parameters

string an alphanumeric string name, 1 to 12 characters; only the first character can be numeric unless setting up the function keys (no default)

"text the value, command, or text defining the string; the text may be preceded with a pound (#) sign; two #s enter a workstation string named #string; use four #s to name this string on the host; quotes are mandatory

Remarks

When *#string* appears in a command, it is replaced by its definition from the string table. When **#SYS***(word)* or **#UC***(word)* appears in a command, it is replaced by the value stored in the specified SYSKEY.TAB or User Common word, respectively. See the SYSVAL and UCU commands for more information.

The string name may contain numerals. An executable string name can have a number only as its first character. A non-executable or text string can have numbers in any position.

To execute a command entered under a string name, type *#string*. See the examples on the next page. If *#string1* is included in another string (e.g., *#string2*), the value of *#string1* is used when *#string2* is executed.

A string name whose first character is a question mark (?) is defined as global. Global strings remain in the table unless you delete them by entering: **TD ALL GLOB**.

Note

You cannot use X as a string name since McIDAS interprets the letter X as a place holder for default values. Likewise, if you have a series of strings beginning with X (e.g., XMAP), you cannot delete these strings with **TD PREFIX X** or execute them with **REPEAT X 1 TO 1**.

See Also

Command TL lists string tables; command TD deletes them; command TU is the string table utility.

Examples

TE LOAD "SEQ 105 108 1 4 EC MSN
This entry places an SEQ command in string LOAD. To execute the command, type: #LOAD.

TE KEYF2 "MAP H
To execute the MAP H command, press the F2 key.

TE NOTE "MAP OF NORTH AMERICA IN SATELLITE PROJECTION
This entry stores the text MAP OF NORTH AMERICA IN SATELLITE PROJECTION in string NOTE.

TE AAA "TERM L ON
This entry stores the command TERM L ON under string AAA.

TE ABQ "SL A ABQ
This entry places string ABQ in the string table. To execute the SL A ABQ command, type: #ABQ.

In the compound string example below, remember to define the string that replaces the # value before defining the string that uses it.

TE A "120
The replacement string is #A.

TE LIST "LA 100 #A
The actual string stored under LIST is LIST=LA 100 120.

To vary the value in #A, insert two # signs in string LIST:
TE LIST "LA 100 ##A
The actual string stored is LIST=LA 100 #A.

If you change string A now, the new value will be used when LIST is executed. For example, if you entered the following change:
TE A "150
The system would use LA 100 150 the next time #LIST was executed.

Assume the following string commands exist on the system.
TE LIST "LA 100 120;# # TVLOAD
TE TVLOAD "DF 101 1 ED MSN

When #LIST is executed, the following commands are executed.
LA 100 120
DF 101 1 ED MSN

TERM

Sets the state of the K, L and O toggles.

Format

TERM *toggle state*

Default

No default; you must specify the parameters.

Parameters

toggle one of the letters K, L, O; see the Remarks

state
- **ON** switches the toggle on (default)
- **OFF** switches the toggle off

Remarks

You will typically use command TERM when your terminal is not in a known state. TERM is commonly used in string tables and macros.

The following is a list of valid commands and their toggles.

Command	Function	Toggle ON	Toggle OFF
K	Toggles the image frame on and off	visible	blank
L	Toggles the frame looping on and off	start	stop
O	Displays the opposite image frame	opposite	base

Examples

TERM L ON
This entry starts the frames looping.

TERM L OFF
This entry stops the frames looping.

TFILE

Sends text output to a disk file.

Format

TFILE *mode window "file*

Default

TFILE
This entry closes the file that is capturing all text output written to the current text window.

Parameters

mode	**OPEN**	opens the file for saving text
	CLOSE	closes the file (default)
	DUMP	dumps the contents of the text window to the file
	DO	dumps the current text window and then opens the file
window	text window number (default=current)	
"file	file name to write into; double quote is mandatory	

Remarks

The file name you specify must not be in use by another task, such as a word processor. The file name, including destination path, may contain up to 40 characters. The default path is the current directory.

The valid range for *window* is determined by the number of text windows allocated when starting up the McIDAS-X session.

Example

TFILE OPEN X "SAWI
This entry opens the file SAWI and places any further output directed to the current window into that file.

TL

Lists the strings in a string table.

Formats

TL ALL
TL OUT
TL *[keyword]*
TL *prefix [keyword]*

Default

TL
This entry lists the first 20 strings from the current string table.

Parameters

ALL	lists the strings that begin with 0-9 or A-Z; the maximum is 256
OUT	lists all strings, including global strings
prefix	lists the strings that begin with this prefix

Keyword

NUM=	number of strings to list (default=20)

Remarks

Strings in the string table are stored alphabetically with numbers 0 to 9 at the beginning of the table. A string whose first character is a question mark (?) is called a global string. It is listed with **TL OUT** or **TL ?**. To list other strings that do not begin with 0-9 or A-Z, use **TL OUT**.

See Also

Use command TD to delete strings and TE to enter strings. Command TU is the string table utility.

Examples

TL CH
This entry lists the strings that begin with CH.

TL ALL
This entry lists all strings; the maximum is 256.

TL NUM=10
This entry lists the first 10 strings in the string table.

TL TEMP NUM=15
This entry lists up to 15 strings starting with TEMP.

TU

String table utility.

Formats

TU SAVE *name [keyword]*
TU DEL *name [keyword]*
TU LIST *initials [keyword]*
TU REST *name initials [keyword]*

Default

TU
This entry lists all string tables on the workstation.

Parameters

SAVE	saves the string table
DEL	deletes the string table
LIST	lists the string tables on the workstation (default)
REST	restores a string table to your workstation and makes it the current string table
name	1- to 12-character name identifying the string table
initials	1- to 4-character name identifying the user who saved the table (default=logon initials) **ALL** lists all tables

Keyword

SAVEFILE=	LW file name to store the table in or restore it from (default=SAVESTR)

Remarks

You can restore any table by entering the table name and user's initials. You cannot save over or delete another user's tables.

The maximum number of tables you can save is 512.

A string name whose first character is a question mark (?) is global and remains after each restore.

Examples

TU SAVE DEMO
This entry saves the current string table under the name DEMO.

TU REST DEMO
This entry restores string table DEMO to the current string table.

TU REST COLOR
This entry restores string COLOR in your workstation, making it the current string table.

TU SAVE CLOUDS
This entry saves the current string table under the logged on initials and the name CLOUDS.

TU REST CLOUDS KJB
This entry restores the string table named CLOUDS which is stored under initials KJB.

TU DEL CLOUDS
This entry deletes the string table CLOUDS. The logged on initials must match the saved initials.

UC

Grids and contours upper air data.

Formats

UC *parm level map time [keywords]*
UC *p1-p2 l1-l2 map t1-t2 [keywords]*

Default

UC *parm level map*
This entry contours *parm* for *level* on the current graphics. It contours over the map in graphics color level 2 using the current day and time.

Parameters

parm	**ABV**	absolute vorticity (10^{-6} sec^{-1})
	DVG	divergence (10^{-6} sec^{-1})
	MIX	mixing ratio (g/kg)
	P	pressure (mb)
	SPD	wind speed (m/s)
	STR	streamline
	T	temperature (° C)
	TD	dew point temperature (° C)
	THA	theta (K)
	THAE	theta E (K)
	VOR	vorticity (10^{-6} sec^{-1})
	Z	height (meters)
	ZS	station elevation (meters); use only with SFC level
level	**MAXW**	maximum wind
	SFC	surface
	TRO1	tropopause 1
	TRO2	tropopause 2
	1000-100	mandatory levels in mb
map	**MID**	Midwest USA
	NA	North America
	SAT	satellite projection
	USA	USA
	Post Office abbreviation	
time	hour (default=0Z if the current time is between 0Z and 1315Z; otherwise, default=12Z)	
p1 - p2	parameter difference used in contouring; subtract *p2* from *p1*	

l1 - l2 level difference used in contouring; subtract *l2* from *l1*

t1 - t2 time difference used in contouring; subtract *t2* from *t1*

Keywords

CINT= grid contour interval (default is parameter dependent)

COLOR= graphics color level; use positive numbers for solid lines and negative numbers for dashed lines (default=2)

DAY= *d1 - d2* year and day; use two values to contour differences, YYDDD (default=current)

GRA= graphics frame number (default=current)

GRIDF= destination grid file number (default=current)

LAT= *min max* minimum and maximum latitudes

LON= *min max* minimum and maximum longitudes

MDF= *f1 - f2* history file number; use two values to contour differences (default=last digit of the current Julian day plus 10)

Remarks

If you don't specify keywords COLOR, CINT, LAT, LON and MDF in the command, the string table is searched for them. If the results are unexpected, use command TL to list the string table.

Parameter advection (ADV) or divergence (DVG) is done by appending the parameter with ADV or DVG.

The day and time default to the current day and time, not the last available data on the workstation.

Specify the keyword DAY= when using history data.

Examples

UC STR 500 SAT 12 COLOR=1
This entry draws streamlines at 500 mb on a satellite projection at 12 GMT in graphics color level 1.

UC T 850 MID
This entry contours 850 mb temperatures over the Midwest for the current day and time.

UC T SFC USA 0-12 MDF=1285 DAY=92062
This entry contours the surface temperature difference between 0 and 12 GMT from history MD file 1285 dated March 3, 1992.

UC Z 500-850 USA 0 MDF=1287 DAY=92063 CINT=30
This entry contours the thickness of the 850 mb to 500 mb pressure surfaces in 30-meter intervals from history MD file 1287.

Below is an example of vorticity advection.

UC VOR 500 USA 12
This entry draws contours of relative vorticity at 500 mb on a USA map for the current day at 12Z. Three grids (U, V and VOR) are filed into the current grid file. Assume U is in grid 1 and VOR is in grid 3. Enter the following two command sequences.

IGG MAKE 1 ADV 3
This entry creates a fourth grid containing vorticity advection.

IGTV 4 100 USA DASH=NEG
This entry draws vorticity advection contours on a USA map, with a contour interval of 100. Negative values are dashed.

UCU

Inspects the User Common (UC) memory block.

Formats

UCU PEEK *word*
UCU POKE *word value*

Default

No default; you must specify the parameters.

Parameters

PEEK	lists the current value in User Common
POKE	places a value in User Common
word	specific word number in User Common
value	new value to place in User Common

Remarks

User Common consists of workstation information that resides in memory. Programs access User Common to obtain current workstation configuration and state data. Each User Common word stores a separate piece of information, e.g., cursor line and element position, current image and graphics frame, current logon initials and project number.

User Common values can be placed directly into local command entries by using **#UC***(word)* to replace a parameter or keyword value. For example, **LB 1 #UC(13)** sets the image loop bounds from 1 to the value stored in User Common word 13.

> **Caution!**
> Do not alter User Common. If you incorrectly modify a UC value, you may need to exit and restart McIDAS-X to reinitialize its state.

Example

UCU PEEK 1
This entry lists the contents of User Common 1 (project number).

UL

Lists upper air data.

Formats

UL AVA *[keywords]*
UL ANL *station time [keywords]*
UL LIST *station time [keywords]*
UL MAND *station time [keywords]*

Default

UL
This entry lists the available upper air data for the entire day.

Parameters

AVA	lists the upper air data availability (default)
ANL	lists the stability indices for the station
LIST	lists mandatory and significant levels
MAND	lists mandatory levels
station	5-digit station ID
time	hour or HH:MM:SS (default=nearest 0 or 12Z)

Keywords

DAY=		year and day of the data, YYDDD (default=current)
MDF=		MD file number containing the data (default=the last digit of the current Julian day plus 10)
OPT=	**0**	lists the mandatory levels with parcel analysis; does not recompute heights or perform interpolations
	1	lists the mandatory and significant temperature levels; does not interpolate winds at significant temperature levels or perform parcel analysis
	3	lists mandatory and significant temperature levels and significant wind levels; recomputes all heights and computes wind pressure; does not perform parcel analysis
	5	lists mandatory and significant temperature levels; interpolates winds at significant temperature levels; does not perform parcel analysis

	7	lists mandatory and significant temperature levels and significant wind levels; makes interpolations for missing data and recomputes heights; computes parcel analysis (default)
PTEMP=	YES	computes the potential temperature and mixing ratio for each level
	NO	does not compute the potential temperature and mixing ratio for each level (default)
SIG=		significant MD file number (default=10 plus the value of MDF if MDF is between 10 and 19; otherwise, default=1 plus the value of MDF)
ZMAX=		lists the data levels less than or equal to ZMAX; height is in meters (default=all levels)

Remarks

The units for precipitable water are in millimeters.

Significant level winds and temperatures are never reported for the same level. Keyword OPT defaults to a full vertical interpolation. This means that when a significant level temperature is reported, the wind speed and direction at that level are interpreted. Conversely, when a significant level wind is reported, the temperature and dew point at the wind level are interpolated. For no interpolation, use OPT=3.

The three keys in the significant level MD file schema (IRSG) are P1, P2 and P3. They are used for significant wind and temperature reports. If a significant wind is reported, P1 is the direction, P2 is the speed and P3 is the height. If a significant temperature is reported, P1 is the temperature, P2 is the dew point and P3 is the pressure.

The day and time default to the current day and time, not the last available data on the workstation. Specify keyword DAY when using history data.

Examples

UL LIST 72645 12 DAY=92010
This entry lists the mandatory and significant levels from day 92010, at 12 GMT, station 72645.

UL AVA MDF=6512 DAY=90250
This entry lists the available upper air data in MD file 6512, day 90250.

UP

Plots upper air data.

Formats

UP *parm level map time [keywords]*
UP *p1-p2 l1-l2 map t1-t2 [keywords]*

Default

UP *parm level map*
This entry plots *parm* for *level* over *map* in graphics color level 3 using the current day and time.

Parameters

parm	**IDN**	5-digit station ID; first 2 digits are dropped in PLOT; IDs are plotted only for the surface level
	MIX	mixing ratio (g/kg)
	P	pressure (mb)
	PLOT	plots station model in the format: T Z * (wind flag) IDN TD (only the last 3 digits of the height and station ID are plotted)
	SPD	wind speed (m/s)
	T	temperature (° C)
	TD	dew point temperature (° C)
	THA	theta (K)
	THAE	theta E (K)
	WIN	wind, DDFF, FF (m/s) meteorological flags Barb = 5 ms^{-1} (~ 10 kts) Flag = 25 ms^{-1} (~ 50 kts)
	Z	surface height (meters)
	ZS	station elevation (meters)
level	**MAXW**	maximum wind
	SFC	surface
	TRO1	tropopause 1
	TRO2	tropopause 2
	1000-100	mandatory levels in mb
map	**MID**	Midwest USA
	NA	North America
	SAT	satellite projection
	USA	USA
	Post Office abbreviation	

time	hour (default=0Z if the current time is between 0Z and 1315Z; otherwise, default=12Z)
p1 - p2	parameter difference used in plotting; subtract *p2* from *p1*
l1 - l2	level difference used in plotting; subtract *l2* from *l1*
t1 - t2	time difference used in plotting; subtract *t2* from *t1*

Keywords

COLOR=	graphics color level (default=3)	
DAY=	*d1 - d2*	year and day; use two values to plot differences, YYDDD (default=current)
DECLUT=YES		declutters the display by not plotting values that overwrite another (default)
NO		plots values that overwrite each other
GRA=	graphics frame number (default=current)	
LAT=	*min max*	minimum and maximum latitudes
LON=	*min max*	minimum and maximum longitudes
MDF=	*f1 - f2*	history file number; use two values to plot differences (default=last digit of the current Julian day plus 10)

Remarks

If you don't specify keywords COLOR, LAT, LON and MDF in the command, the string table is searched for them. If the results are unexpected, use command TL to list the string table.

The day and time default to the current day and time, not the last available data on the workstation.

Specify DAY= when using history data.

Examples

UP T 850 MID
This entry plots current temperatures at 850 mb over the Midwest.

UP IDN SFC USA COLOR=5
This entry plots station numbers over the USA in graphics color level 5.

UP WIN 850 X 0 MDF=6512 LAT=30 45 LON=80 100
This entry plots winds at 850 mb, 0 GMT in MD file 6512. The latitude range is 30° to 45° N; the longitude range is 80° to 100° W.

UP Z 500-1000 USA
This entry plots the current 1000/500 mb thickness over the U.S.

UP T-TD 850 USA
This entry plots the current dew point depression over the U.S.

UP Z 500 USA 12-12 MDF=15-14 DAY=92025-92024
This entry plots the 24-hour 500 mb height change from 12 GMT, day 92024 to 12 GMT, day 92025.

VASTBL

Creates calibration transforms for Mode AA VAS data.

Remarks

Mode AA data was transmitted by GOES satellites between 22 September 1980 and 18 November 1986. If you use 2-byte Mode AA VAS data on your workstation, you must run this command.

Type: **VASTBL**
Press: **Enter**

This entry generates a file of about 6.5 megabytes called VASTBLS that is used specifically for 2-byte Mode AA VAS data. It takes several minutes to run.

XFONTS

X fonts utility.

Formats

XFONTS LIST
XFONTS ON
XFONTS OFF
XFONTS SET *"string*
XFONTS SET *fffws*

Default

XFONTS
This entry lists the available fonts.

Parameters

LIST lists the available fonts (default)

ON turns on X fonts for drawing text

OFF turns off X fonts

SET sets the font name

"string string specifying the first 4 fields of the font description; taken from the file fonts.dir

fffws font name to use (default=COUMR)
- *fff* three-character family name
- *w*
  - **B** bold weight
  - **M** medium weight
- *s*
  - **I** italic slant
  - **O** oblique slant
  - **R** Roman slant

Remarks

Text is plotted in the font closest to the one requested. The largest font size is 30 points. If XFONTS is ON and you enter **ZA 3 40 " Test**, Test is plotted in the selected font, but at 30 points rather than the 40 points designated in the command. Use the global keyword FONT= with any graphics command to override the current XFONTS setting.

Examples

XFONTS SET TIMMR
This entry plots the graphics in Times Roman, medium weight.

XFONTS SET "-ADOBE-TIMES-MEDIUM-R-*
This entry performs the same function as the one above.

XSECT

Displays a vertical cross section.

Format

XSECT *bid eid [keywords] "text*

Default

XSECT *bid eid*
This entry displays a cross section of isentropes drawn from the mandatory and significant level information contained in the current IRAB and IRSG system MD files. The reporting stations used lie within a 500 km wide corridor along the cross section axis between the beginning and ending station ID numbers.

Parameters

bid	beginning station ID number
eid	ending station ID number
"*text*	cross section title; up to 42 characters

Keywords

CINT=	*c1 . . . cn*	contour interval (default=see the table in the Remarks)
COLOR=	*l1 . . . ln*	contour color level (default=see the table in the Remarks)
DAY=		MD file Julian day, YYDDD (default=current)
ERASE=	**NO**	does not automatically erase the graphics frame
	YES	automatically erases the graphics frame (default)
FORM=	*f1 . . . fn*	see the table in the Remarks for the defaults
	DIR	reported wind directions, 0-360° clockwise from the north
	MIX	derived mixing ratios, g/kg
	SPD	reported wind speeds, m/s
	SPDE	derived wind speed projected normal to the cross section axis and enhanced by thermal information through the geostrophic wind wind equation, m/s
	SPDN	derived wind speed normal to the cross section axis, m/s; see the Remarks
	SPDS	derived wind speed tangential to the cross section axis, m/s
	SPDZ	derived vertical wind speed shear, 1/s
	T	reported temperature, C

	TD	reported dew point temperature, C
	THA	derived isentropes, K (default)
	U	derived u-component of the reported wind speed, m/s
	V	derived v-component of the reported wind speed, m/s
	WIN	wind barbs of the reported winds, kt
	Z	reported heights, m
GCOLOR=	background border and interior grid color level (default=1)	
GRA=	graphics frame (default=current)	
IDN=	*id1 . . 25*	station ID numbers for the cross section
LABEL=	**YES**	displays parameter labels (default)
	NO	does not display parameter labels
LAT=	*end beg*	latitude limits for the cross section (default=*eid bid*)
LDASH=	*l1 . . ln*	contour dashing; use with keyword FORM
	-2	all values are dashed
	-1	only negative values are dashed
	0	no dashing
	(default=see the table in the Remarks)	
LINT=	label interval of contours (default=see the table in the Remarks)	
LON=	*end beg*	longititude limits for the cross section (default=*eid bid*)
LSIZE=	label size of contours (default=see the table in the Remarks)	
MAP=	**NO**	does not plot a map showing the cross section location (default)
	YES	plots a map showing the cross section location
MDF=	*mand sig*	mandatory and significant level MD file numbers (default=current IRAB and IRSG). Set *sig* to 0 if only mandatory levels are needed. Giving *sig* a value is only valid when *mand* is specified.
PAN=	graphics quarter panel number: 0, 1, 2, 3, 4 (default=0) Specifying this keyword automatically sets the keyword ERASE to NO.	

PBOT= bottom mandatory pressure level of the cross section (default=1050 mb)

PTOP= top mandatory pressure level of the cross section (default=100 mb)

SMOOTH= smoothing factor (default=see the table in the Remarks)

TIME= MD file time, HH:MM:SS (default=most current)

TITLE= title and ID label color level (default=3)

UNIT= units of contours (default=see the table in the Remarks)

WIDTH= corridor half width in kilometers (default=±250 km)

Remarks

The first station specified with *bid* or the IDN keyword is on the left edge of the display; the last station specified is on the right edge. The stations selected with the LAT/LON keywords are displayed first on the left and last on the right, based on whether the longitudinal or latitudinal extent of the cross section is larger. Consequently, if you reverse the order for selecting stations, the orientation of the cross section will be affected. Altering the order may also impact the intermediate station selections as stations are included/excluded in order from first to last.

The maximum number of stations is 25. When two stations projected along the cross section axis lie too close to each other to allow a solution for the contouring algorithm, the station farthest from the beginning of the cross section is excluded.

If more than 25 stations are selected with the IDN keyword, the program aborts. If more than 25 stations are selected using the *bid/eid* parameters and the LAT/LON keywords, the program doesn't abort, but uses only the first 25 stations selected and lists appropriate error messages.

If a station report is missing a surface pressure or reports less than three levels of information, it is excluded. If a station provides a partial report, the missing levels are not included in the contouring analysis and that area of the cross section display is blank.

The MDF keyword has two parameters. The second parameter is only valid when the first parameter refers to a IRAB MD file. The second parameter is assumed to be its corresponding IRSG MD file. When only the mandatory IRAB levels are included in the vertical contouring, the second parameter must be set to zero.

You can specify the FORM keyword options in any combination and order. However, the sequence must be maintained when invoking any of the context specific keywords, i.e., CINT, LINT, COLOR, UNIT, LDASH, LSIZE or SMOOTH.

Graphics options conform to IGTV standards.

If you use the PAN keyword, the keyword ERASE is set to NO unless you specify otherwise.

The orientation for SPDN and SPDS with respect to the cross section axis is the positive tangential direction. This direction is along the cross section axis going from the last station towards the first station with the positive perpendicular (normal) direction following a right-hand rule, i.e., positive to the right relative to the positive tangential direction. This scheme results in the mathematically appropriate sign which is appropriate for the cross section orientation but may not be equivalent to the physically intuitive sign that you anticipate. The SPDN and SPDS signs vary with the cross section orientation although the contour patterns are very similar.

XSECT checks for missing values and obviously bad data, such as negative temperatures. If the cross section output seems incorrect, run command SKEWT or UL on the suspect station soundings to check the input values.

The table below defines the defaults for the keyword FORM.

FORM	CINT	COLOR	LDASH	LINT	LSIZE	SMOOTH	UNIT
DIR	90	1	-2	1	6	20	deg
MIX	2	4	-2	1	6	20	g/kg
SPD	5	2	0	1	6	20	MPS
SPDE	5	2	-1	1	6	40	MPS
SPDN	5	2	-1	1	6	20	MPS
SPDS	5	2	-1	1	6	20	MPS
SPDZ	5	2	-1	1	6	40	1/S
T	5	5	-1	2	6	20	C
TD	5	4	-1	2	6	20	C
THA	5	5	-1	2	6	20	K
U	5	2	-1	2	6	20	MPS
V	5	3	-1	2	6	20	MPS
WIN	NA	7	NA	NA	8	NA	KT
Z	1000	1	-1	5	6	20	M

Examples

XSECT 72747 72203
This entry displays an isentropic cross section from station reports lying within a 250 km corridor along a cross section axis from station 72747 to station 72203.

XSECT 72747 72203 MAP=Y
This entry is the same as the first example, but it also displays a map in the upper-right corner which indicates the location of the cross section axis and the included stations.

XSECT 72747 72203 FORM=MIX THA SPD LDASH=0 X -2
This entry is the same as the first example, but it also overlays the mixing ratio cross section without dashing contours, the isentropic cross section dashing negative contours only, and the isotach cross section dashing all contours.

XSECT 72747 72203 PTOP=400 WIDTH=150 FORM=MIX
This entry displays a mixing ratio cross section for a narrower corridor width along the same cross section axis as in the first example. It emphasizes the lower levels by limiting the top pressure level to 400 mb.

XSECT 72747 72203 FORM=MIX THA SPD COLOR=1 2 3 CINT=X 5 10
This entry is the same as the third example, except the graphics color level for the mixing ratio contours is set to 1, the isentropes to 2, and isotachs to 3. It uses the default contour interval for the mixing ratios. The isentropic contour interval is set at 5 degK, while the isotach contour interval is set at 10 m/s.

XSECT LAT=30 55 LON=100 FORM=SPD WIN UNIT=KT PBOT=500 PTOP=100 MAP=Y
This entry displays a cross section of wind speed in knots from 500 to 100 mb along 100 W from 30° to 55° N. Wind barbs are also displayed. Station selection occurs automatically.

XSECT FORM=SPDZ SMOOTH=100 COLOR=4 IDN=72694 72681 72576 72562 MAP=Y LSIZE=10
This entry draws a cross section of vertical wind speed shear from Salem, Oregon, to North Platte, Nebraska, using the IDN keyword to specify the stations to include. The graphic displays a small map of the cross section location. The contours are in graphics color level 4; the label size for the contours is 10 pixels. This entry also smooths the analysis by a factor of 100.

ZA

Places an annotation on the current graphics frame at the cursor position.

Format

ZA *color height justify [keywords] "text*

Default

ZA *"text*
This entry writes the *text* on the current frame in graphics color level 1, 10 pixels high.

Parameters

color graphics color level (default=1)

height letter height in pixels (default=10)

justify
- **L** left justify the text; the upper-left corner of the first letter of the text or symbol is placed at the center of the cursor (default)
- **R** right justify the text; the upper-right corner of the last letter of the text or symbol is placed at the center of the cursor
- **C** centers the text; the top of the center letter of the text or symbol is placed at the center of the cursor
- **V** vertical justification of the text; the upper-left corner of the text or symbol is placed at the center of the cursor; consecutive letters are written below the previous letter
- **M** mouse; see the Remarks
- **N** numerous plots of the same text or symbol; the center letter of the text or the center of the symbol is placed at the center of the cursor

"text text to write on the graphics frame; you may use uppercase and/or lowercase letters; quotes are mandatory and may be substituted with curly brackets ({})

"$text displays weather symbols or arrows on the graphics; enter a dollar sign ($) before any of the alphanumeric characters below to plot the corresponding weather symbols

T	thunderstorm		R	rain	o
W	rain shower		S	snow	*
X	snow shower		F	fog	

C	clear		0	
Q	partly cloudy		1	
B	mostly cloudy		2	
O	overcast		3	
D	drizzle		4	
H	haze		5	
Z	freezing rain		6	
$$	$		7	

Keywords

ANG= angle to write text; do not use with XFONTS or global keyword FONT, or keywords ENCL and TC

ENCL= **C** draws a circle around the text in the **N** mode
E draws an ellipse around the text in the **N** mode

GRA= graphics frame number (default=current)

TC= *color hemisphere*
color plots a hurricane symbol with the specified color level
X plots a tropical cyclone symbol
hemisphere determines the direction of spirals
S southern hemisphere (default)
N northern hemisphere

WID= line width in pixels; the maximum is 64 (default=current)

Remarks

Use the global keyword FONT= to change a font for a single command entry. See Appendix A.

Toggle the Caps Lock key (or press the Shift key while typing) to write lowercase letters. Remember to press it again before entering the next command, as McIDAS commands are normally entered in uppercase letters.

When you choose the M(ouse) option, the position of the mouse and the clicking of its buttons control the location of the cursor text. Clicking the middle mouse button repositions the start of the text at the cursor location. Clicking the right mouse button repositions the end of the text at the cursor location. The height is scaled as needed.

If you use XFONTS or keyword FONT with the M option, the text is positioned horizontally at various sizes. You cannot angle the text.

Tropical cyclone and hurricane symbols are always plotted at the center of the cursor, regardless of the justification specified.

The practical maximum number of characters for keyword ENCL is 3.

See Also

Use command XFONTS to change fonts for all graphics commands.

Examples

ZA 3 15 "MCIDAS
This entry writes the word MCIDAS in uppercase letters in graphics color level 3 on the current graphics frame. The entry is 15 pixels high and left justified.

ZA 2 20 C GRA=2 {streamlines}
This entry writes the word streamlines in lowercase letters in graphics color level 2 on graphics frame 2. The entry is 20 pixels high and centered under the cursor's center. Curly brackets can be used to replace the double quote.

ZA 5 7 V FONT=HELBO "Nevada
This entry writes the word Nevada vertically on the current graphics frame in graphics color level 5 using the bold, oblique, Helvetica font. The upper-left corner of the N is at the cursor's center. The letters are 7 pixels high.

ZA 4 20 L ANG=45 "Green Mountains
This entry writes the label Green Mountains at a 45° angle in graphics color level 4. The letters are 20 pixels high and left justified in relation to the cursor.

ZLM

Permits freehand drawing using the mouse.

Formats

ZLM BOX *color*
ZLM CIRCLE *color*
ZLM DRAW *color [keyword]*
ZLM FILL *color height width*
ZLM FREE *color*

Default

ZLM
This entry draws a line in graphics color level 3.

Parameters

BOX	draws a box the same size and shape as the cursor
CIRCLE	draws a circle or ellipse in the cursor
DRAW	permits smooth freehand drawing
FILL	draws and fills a box the same size and shape as the cursor
FREE	permits straight-line freehand drawing (default)
color	graphics color level (default=3)
height	height of the area to fill, in pixels (default=cursor height)
width	width of the area to fill, in pixels (default=cursor width)

Keyword

SMOOTH=	number of samples to take for the running average; use with the DRAW option; larger numbers produce smoother lines; maximum is 50 (default=3)

Remarks

You cannot change the cursor size with the mouse in McIDAS-X; use command CUR to resize the cursor.

Examples

ZLM

This entry displays the response below on the screen.

```
Move mouse to position the cursor on the image frame.
Press the MIDDLE mouse button to select point for option.
Press the RIGHT mouse button to end option.
Press BOTH mouse buttons to end ZLM.
```

ZLM BOX

This entry displays the response below on the screen.

```
Move mouse to position the cursor on the image frame.
Press the RIGHT mouse button to draw the box.
Press BOTH mouse buttons to end ZLM.
```

ZLM DRAW 4 SMOOTH=10

This entry displays the response below on the screen.

```
Move mouse to position the cursor on the image frame.
Press the MIDDLE mouse button and hold, while
moving the cursor wherever on the screen you want to draw.
Press the RIGHT mouse button to end option.
Press BOTH mouse buttons to end ZLM.
```

Following the above directions produces a smooth line drawing in graphics color level 4 with a running average of 10.

Appendix A
Global Keywords

McIDAS-X has four global keywords that can be used with any command. They are:

- DEV=
- FONT=
- TWIN=
- VIRT=

DEV= and TWIN= are for routing text output. FONT= and VIRT= are for graphical output. Each is described below. These keywords are not listed in the Keywords section of any command documentation or the on-line helps.

DEV=

This keyword specifies the destination device of text output generated by a command.

DEV=	**C**	sends all output to the CRT (text window)
	P	sends all output to the printer
	N	discards all output
	F *file*	sends all output to a specified LW file

Below are two examples.

LA 100 120 DEV=P
This entry executes the LA command, routing the output to the printer.

EU LIST DEV=F EULIST
This entry executes the EU command, routing the output to the file EULIST.

FONT=

This keyword specifies the font used to draw text to the screen. If the requested font size is not available, the closest smaller font size is used. To list the valid font names, use command **XFONTS LIST**. Below is an example.

ZA 3 20 FONT=HELBO "Using HELBO font
This entry executes command ZA using a bold, oblique, Helvetica font.

TWIN=

This keyword specifies the destination text window to route the command output to. Valid numbers depend on the number of text screens opened when McIDAS is started. Text windows are numbered from 0. Below is an example.

GU TAB GRAPHIC TWIN=1
This entry executes the GU command, routing the output to text window number 1.

VIRT=

This keyword specifies a virtual graphics number. It applies only to commands that generate graphics. To list your virtual graphics files, use **DMAP VIRT**.

VIRT=*number* **A**	appends the graphics to the specified virtual graphics number, the range is 0-9999
number **R**	replaces the virtual graphics file with the specified file number, the range is 0-9999 (default)

Graphics are simultaneously drawn on a graphics frame and saved to a designated file. The file name is of the form VIRT*xxxx* where *xxxx* is the number specified in the keyword. Below are three examples.

MAP USA VIRT=1
This entry draws a map of the USA on the graphics frame and writes the output to file VIRT0001, which can later be restored using command SHOWVG.

MAP USA X LALO VIRT=1 A
This entry draws a map of the USA on the graphics frame, appending it to the output in file VIRT0001. It can later be restored using command SHOWVG.

MAP MID VIRT=1 R
This entry replaces the USA map above with a map of the Midwest United States.

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